ARCHIVES OF OPHTHALMOLOGY.

REMARKS ON A CASE OF RECURRENT PALSY OF THE THIRD NERVE.[1]

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THE clinical history of the case, which is the subject of these remarks, is as follows:

J. G. D., a native of the Canary Isles, twenty-two years of age, a strong and healthy youth, who had spent most of his life in the country and who had recently enlisted in the "Rural Guards," on April 11th of last year entered the department which that Corps has assigned to it in "Nuestra Señora de las Mercedes" Hospital of this city under the charge of Captain Sonville, by whom I was called in on the 15th of the same month.

Previous History.—The patient related that since the age of six he had suffered periodically from severe "headaches," which always affected the form of a right hemicrania, the pain being centred around the eye of the same side; that these headaches, which only came on from time to time, lasted from two to three days and were always accompanied by vomiting and symptoms of general malaise. They do not seem to have been preceded by any visual aura.

In other respects the patient's health had always been excellent. There were no personal or hereditary antecedents of pathological import, neither from the point of view of syphilis, rheumatism, etc., nor from that of any affection of the nervous system.

[1] Read at the Havana Academy of Medical, Natural, and Physical Sciences on July 12, 1907.

In June of 1906, at the termination of an attack in every way similar to his previous ones, there appeared, for the first time, symptoms of paralysis of the third nerve (ptosis, divergence, diplopia, etc.); at the end of eight days some improvement set in, which ended in a complete recovery at the end of three weeks.

History of the Present Attack.—The patient was completely free from all kinds of headache till the 11th of April, on which day commenced the attack which I had the opportunity to observe. The "period of pain" lasted four days and was intense and accompanied by vomiting, general malaise being as usual limited to the right side. On the sudden cessation of the pain on April 15th, the symptoms of paralysis made their appearance, I being then called in.

Status Præsens.—Total and complete right ophthalmoplegia —ptosis, complete immobility of the eyeball, which was in strong abduction, due to the non-compensated action of the external rectus; the mobility upwards, downwards, and inwards was abolished, as well as the elevation of the upper lid; the pupil was dilated and immovable and the accommodation was paralyzed. The fundus was normal.

V (R) (without correction): $\frac{20}{60}$, w. + 0.75; $\frac{20}{20}$, w. + 3.75; Sn. 1. V (L): $\frac{20}{20}$; Hm. 0.75; Sn. 1.

Visual field (both) normal.

There was crossed diplopia.

There was no anæsthesia of the region innervated by the first branch of the fifth nerve.

The urine was normal.

The examination of the blood showed only an insignificant leucocytosis.

At the end of a few days a slight improvement set in, but on April 23d there was a relapse in the shape of a new attack of pain, less severe than the first one, which lasted one day, and which was followed by an exacerbation of the symptoms of the paralysis. During the pain the patient was drowsy and presented a slight elevation of temperature (37·3°).

After this, convalescence frankly set in, all the symptoms of the paralysis having gradually disappeared till to-day (July 12th) there only persists that of the iris and ciliary

muscle, and as it is already several weeks since there has been any change in the patient's condition, I fear these will remain as permanent lesions.

As far as treatment goes, at first I employed potassium bromide and later KI and strychnin.

Our knowledge of this affection is limited and dates from a comparatively recent epoch. In the literature at my disposal, I have only been able to find reports of some 88 cases; 14 of these were described by American authors; in Cuba the only other case published was one of Drs. Valdes Anciano and Grande Rossi [1] by whom it was presented to the First National Cuban Medical Congress.

The earliest case was described by Gübler in 1860[2]; in 1869 Homer published another[3]; in 1877 Adams[4] reported a case of paralysis of the third nerve which presented itself in the shape of successive attacks separated by intervals during which all its manifestations were in abeyance, and yet another case was reported by Saundby[5] in 1882, but it was Möbius who on publishing a new case in 1884[6] first described the disease as a clinical entity. After this, publications on the subject commenced to appear, especially in Germany and in England; in France, although the earliest case made its appearance there, no attention seems to have been paid to it till MM. Parinaud et Marie published a case[7] in 1885, and especially till Charcot on reporting a case[8] in 1890 proposed that this affection be named "Ophthalmoplegic Migraine" (Migraine ophtalmoplégique) on account of his theory as to its pathogenesis; this name has been very popular and has been accepted and adopted by a large number of

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[1] *Revista Medica Cubana*, 1905.

[2] *Gaz. des hôp.*, 1860, No. 17.

[3] *Klin. Monatsbl. f. Augenheilk.*, 1869.

[4] *London Royal Ophth. Hosp. Reps.*, Dec., 1877.

[5] *Lancet*, Sept. 2, 1882.

[6] *Neurol. Beitr.*, iv.; *Deutsche Zeitschr. f. Nervenheilk.*, xvii., 299; and *Berlin. klin. Wochenschr.*, 1884. No. 38.

[7] *Arch. de neurol.*, 1885. [8] *Progrès méd.*, 1890.

authors especially of Latin and American procedure. From this on, the reports of cases become more numerous, and appear from all sides, the authors all vying in their efforts to shed some light on the mysterious problem of its etiology and pathogenesis.

FREQUENCY.—This disease is more frequent in *young adults;* some cases have however been observed in infancy, and others with still less frequency in old age.[1] The great majority of cases belong to the working classes.

SYMPTOMS AND COURSE.—In almost all the cases which have been under observation for a sufficient length of time, it is possible to divide its course into *four stages.*

First Stage.—During this the patient suffers from periodic attacks of hemicrania (which almost invariably affect the same side), accompanied by general disturbance in the shape of vomiting, general malaise, etc. These attacks vary in their duration from a few hours to a few days, and can be differentiated from ordinary attacks of ophthalmic migraine by the absence of a visual aura (scotoma scintillans and hemianopsia fugax). Among the published cases there is, however, an exception to this rule reported by Chabbert,[2] the patient being a woman who, having her whole life suffered from typical attacks of ophthalmic migraine with a perfectly marked visual aura, after the age of fifty-two presented at their termination a third-nerve paralysis. In this stage, which may be termed *prodromic*, there exist no muscular disturbances either during or after the attacks.

Second Stage.—In this, the attacks of pain cease in a

[1] See cases: of AXENFELD-SCHURENBERG (72d Meeting of the Society of German Scientists and Physicians, Aix la Chapelle, Sept. 16–22, 1900—ARCH. OF OPHTH., XXX., 187), which presented itself congenitally; of DE SCHWEINITZ (*Boston Med. & Surg. Journ.*, 1895, p. 341), in a child 1½ years of age; of MÖBIUS (*Berlin. klin. Wochenschr.*, 1884, p. 38), in a child of three; and those of DEMICHERI (*La clinique ophtalm.*, 1899, p. 18), in a woman of 64; of CHABBERT (*Le Progrès méd.*, 1895, p. 15), in a woman of 52; and of BOUCHARD (*Presse méd.*, Avr. 28, 1887), in a woman of 60.

[2] *Le Progrès méd.*, 1895, No. 15, 241.

brusque manner and are followed by the onset of symptoms of paralysis, generally on the part of the third nerve; symptoms which after a while decrease in intensity, gradually disappearing with a return of the paralyzed muscles to their normal condition, during the intervals between the attacks no disturbance of the muscular equilibrium of the eyes being noticeable.

Third Stage.—The attacks have the same character as in the second, the only difference being that after their subsidence a certain amount of paralysis or paresis is found to persist in one or more of the affected muscles, paresis which after each attack becomes more and more marked till in the

Fourth Stage the paralysis is permanent, the attacks of pain recurring at more or less distant intervals.

Our patient seems to have entered the third stage.

The ATTACK proper presents two periods: (*a*) *The Period of Pain.* This makes its appearance suddenly and always affects the same side of the head, being centred around the eye; the intensity of the pain increases gradually till it acquires a high degree, and is accompanied by malaise, chills, nausea, etc. Its duration, as already stated, is of several hours to several days, and it comes to an end abruptly by a fit of vomiting followed by the appearance of (*b*) *The Period of Paralysis.* The palsy is, as a rule, limited to the third nerve and is usually total and complete. This period may last from several days to several months, recovery taking place gradually. In some cases anæsthesia of the region innervated by the first branch of the fifth has been observed.[1]

The affected nerve is commonly the third, but cases of recurrent paralysis of the fourth, sixth, and seventh have been reported.[2]

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[1] KNAPP—*Boston Med. & Surg. Journ.*, Sept. 27, 1894.
HAYNES—*N. Y. Med. Journ.*, 1897.

[2] LEIZEMBERGER—(*Neurolog. Centralbl.*, xvii., 2, 73). Recurrent palsy of the fourth nerve.

Almost without exception the paralysis affects the same side, a case of Charcot[1] often quoted as an exception being in my opinion a bilateral affection, that of the right side presenting a palsy of the third nerve and that of the left one of the sixth, at times the disease making its appearance on one side, at others on the other.

As a rarity, it is worth while mentioning a case of recurrent palsy of the third nerve, of syphilitic origin, reported by Lamy,[2] in which the painful periods were not present in the attacks.

Diagnosis.—In arriving at this, we should not lose sight of the fact which Bernheimer so opportunely calls attention to,[3] that this disease, apart from the form of the attacks and the periodicity with which they make their appearance, is characterized by the complete absence of all other symptoms from the side of the nervous system.

The application of this circumstance permits us to eliminate easily other processes whose symptoms bear some similarity to those of this affection.

In *cerebral tumor*, there exists, as a rule, besides, some optic neuritis, and it is rare for the paralysis to be limited to one nerve; the headache and tendency to vomiting are more persistent, and there may exist visual and other

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Coutouzis—(*Journ. de méd. et de chirurg. prat.*, Avril 25, 1897). Palsy of the third and fourth nerves.

Holmes and Spicer—(*Trans. of the Ophth. Soc. of the Unit. Kingd.*, 1896). Palsy of the sixth nerve.

de Schweinitz—(*Phila. Polyclinic*, vi., 39). Palsy of the sixth nerve.

Charcot—(*Rev. neurolog.*, 5, 6). Bilateral paralysis, one side of the third and the other of the sixth nerve.

Paderstein—(*Deutsche Zeitschr. f. Nervenheilk.*, xv., 5–6, p., 418. Paralysis of the sixth, paresis of the superior rectus.

Rossolino—(*Neurolog. Centralbl.*, 1901, p. 744). Paralysis of the seventh.

[1] *Rev. neurolog.*, 5 and 6.

[2] *Soc. méd. des hôp. Dic.*, 1900.

[3] *Gräfe-Sämisch*, viii., 2, 81.

nervous disturbances which may vary with its localization.

Cerebral syphilis may affect the third nerve, but it is rare for it to limit its action to a single nerve; there exist also, as a rule, other signs of syphilis.

Nuclear paralysis is not total from the beginning, but is distinguished by its progressive character; it is also very rare to find it limited to one side.

Locomotor ataxia, which may, among its symptoms, present a paralysis of the third or some other cranial nerve, which at times may have a recurrent character, has other signs by which it can be easily differentiated.

The general symptoms which accompany a *basilar meningitis* (fever, etc.) and the rarity of the limitation of its effects to one nerve easily permit us to diagnose a paralysis due to this cause.

The examination of the visual field and the finding of the different stigmata of hysteria allow us to recognize any hysterical paralysis which may affect this form.

Etiology and Pathogenesis.—This is the most interesting chapter in the study of this mysterious disease.

Its origin is, as a rule, unknown; in a few cases there seems to have been syphilis, in a very few cases hysteria has been recognized, in some cases there is a history of alcoholism, in some there exist rheumatic antecedents, in a few isolated cases the existence of malaria has been proved,[1] but the immense majority occur in healthy and robust individuals without any demonstrable pathological antecedents.

The localization of the lesion is comparatively easy. A lesion of the nucleus of the third nerve can be excluded, for it is difficult to conceive a lesion so extensive and at

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[1] Among others, see cases: of Kljatschin (*Neurolog. Centralbl.*, 1897, iv., 460), of malarial origin; of Thompson (*Char. ann.*, 1885), which presented symptoms of hysteria; and of Lamy (*Soc. méd. des hôp. Dic.*, 1890; *Arch. de Oftalm. Hispano-Americanos*, i., 143), apparently of syphilitic origin.

the same time so limited as to involve the whole nucleus of one side at the same time respecting that of the other. A lesion of the intracrural portion of the third can likewise be excluded, given the absence of symptoms of paralysis and anæsthesia in other regions of the body. A peripheric paralysis must necessarily be partial. Thus by a process of exclusion the lesion can be located in the basilar portion of the third nerve, where its relations with the bony bed of the middle cerebral fossa are most intimate.

The nature of the lesion has been the subject of much surmise. Prior to 1890, all authors ascribed the affection to a more or less direct lesion of the third nerve; in 1890 Charcot, on giving the disease the name of "Ophthalmoplegic Migraine," ascribes the clinical complex to functional disturbances of vasomotor origin, explaining the more or less permanent lesions which are so frequent after a certain time by nutritive disturbances secondary to the first. Owing to the authority of its enunciator this theory became very popular and appears in all the publications especially of Latin and American origin. Of late there has been some reaction against it; even in France the authors seem to incline towards the existence of a real lesion.[1] In fact it is difficult to conceive of a vasomotor disturbance the effects of which last for months, and the fact that the only four cases which have had autopsies performed on them have shown actual lesions of the third nerve,[2]

[1] See report of case presented at the Soc. d'opht. de Paris on March 5, 1907, by Lapersonne, with subsequent discussion (*Ann. d'oc.*, cxxxvii., 311).

[2] Gübler—(*Gaz. des hôp.*, 1860, No. 171). Lesion: Meningitis—fibrinous exudate surrounding the third nerve.

Richter—(*Arch. f. Psych.*, 1887). Lesion: Fibro-chondroma of the third nerve.

Weiss—(*Wiener med. Wochenschr.*, Apr., 1889). Lesion: Tubercles of roots of third nerve.

Karplus—(*Wiener med. Wochenschr.*, 1895, Nos. 50 and 52). Lesion: Fibroma of third nerve.

adds strength to the theory of the production of this symptom-complex by a direct or indirect involvement of it by the pathological process. This theory is in addition supported by a series of arguments of a more or less hypothetical nature, founded on the intimate relations existing between the third and other nerves situated at the base of the brain and the bony bed of the middle cerebral fossa and the margins of the sphenoidal fissure; inflammations and lesions in these situations being able to affect these nerves indirectly—the ups and downs in the growth of tumors, the variations in the existence, quantity, and quality of exudates, the recrudescence and retrogression of periostites, etc., easily explaining the clinical picture of this affection—the period of pain corresponding to the congestive period and that of paralysis to that of exudation.[1]

The only anatomical argument which I have found in support of the vasomotor theory is a note in a paper of D'Astres[2] in reference to a communication of Alezais to the Paris Biological Society in 1892, in which the latter maintains that the nucleus of the third nerve as well as its first portion is nourished by a special system of terminal arteries which arise from the posterior cerebral artery, but I have not been able to find any confirmation of the fact in any other publication or work. Even if the fact be exact and constant, it however in no way contradicts the theory of the production of the affection by an actual lesion directly or indirectly involving the nerve.

There exist however a very few cases in which a vasomotor origin can be admitted with a secondary production of congestion, œdema, extravasations of blood,

[1] Schmidt-Rimpler (*Handb. v. Nothnagel*, xxi.) attributes the symptom-complex to a lesion of the superior orbital fissure, especially in those cases in which pressure on the superior orbital margin and on the eyeball is painful and in which the use of sodium salicylate and the production of sweating are of benefit. Bernheimer (*Gräfe-Sämisch*, viii., 1. 81) quotes three cases in support of this explanation.

[2] *Presse méd.*, Jan 20, 1898.

etc.; I refer to those in which the symptom-complex appears in connection with the menstrual epoch or with a series of successive pregnancies.[1]

Leszynsky in a discussion of a case of Wolf's at the Ophthalmological Section of the N. Y. Academy of Medicine[2] makes reference to a theory of Spitzka explaining the affection by an obstruction of the foramen of Munro with secondary vascular engorgement and compression of the third nerve. None of the authors I have consulted seems to have given this theory much importance; to me the explanation appears somewhat forced.

PROGNOSIS.—As can be deduced from the foregoing, this, although comparatively favorable as regards the individual attacks, is unfavorable as regards the final outcome, for we have seen that eventually the affection will probably produce more or less permanent lesions of the affected nerve.

TREATMENT.—In the great majority of cases this has to be purely symptomatic and palliative. In my case, at the start I used bromide of potassium and later iodide of potassium and strychnin; I cannot say that I believe that they exercised any influence on the course of the attack, although it seemed to me that after I commenced the use of strychnin the paralytic symptoms decreased more rapidly, but this may have been a mere coincidence.

In the few cases where a diathesis of any kind is suspected, this must be treated more or less energetically.

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[1] SENATOR—*Zeitschr. f. klin. Med.*, xiii., 352.
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[2] ARCH. OF OPHTH., xxxi., 404

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ON EXTRACTION OF CATARACT IN THE CAPSULE. REPORT OF A VISIT TO MAJOR HENRY SMITH IN JULLUNDER, INDIA.

By ARNOLD KNAPP, M.D.

TWICE a year for a period of six weeks in the spring and fall cataract patients present themselves for operation at the Jullunder General Hospital. The total number of cataract operations during the past year were a few short of 3000, and 50 extractions in one morning during the "season" is not unusual. Each morning the patients wait in the courtyard for the arrival of Major Smith, who, standing in the doorway of the operating-room, examines them in turn. The operable cases are admitted and grouped about the floor of the operating-room.

Without any general preparation they are then placed directly on a flat operating table. The eye to be operated upon is carefully washed with soap and water, cocaine is instilled, and the conjunctival sac irrigated with a 1 to 2000 bichloride of mercury solution. The instruments are sterilized in a carbolic solution. Major Smith sits at the head of the table on a low stool and operates with either hand.

The usual speculum is inserted, the eyeball fixed, and the corneal section is made; it is somewhat larger than usual, includes nearly one-half of the corneal circumference, and is entirely corneal. Generally a small iridectomy is performed not with a view of facilitating the delivery in the capsule but of avoiding iris-prolapse.

The speculum is then removed and the eyelids are retracted by the native assistant, the upper lid with a blunt hook like an aneurism needle, the lower lid with the finger; the orbicularis is thus under control. With the patient looking straight ahead or even preferably slightly upward, though no instructions whatever are given the patient throughout the operation, pressure is exerted to dislocate the lens in its capsule. A large strabismus hook is used; pressure is applied in the lower third of the cornea in one of two directions, straight back if the upper pole is to present first, back and down if the lens is to be made to present with its lower pole first, in other words to describe a half revolution. As soon as the lens is dislocated and its greatest diameter presents in the corneal section, the direction of the pressure is changed, and with the point of the hook working up the remainder of the attachment is gently loosened and the lens delivered in its capsule. As little manipulation as possible is then practised, both eyes are bandaged, and the patient carried to the ward. Both eyes are operated at one sitting if necessary. If there is no pain the dressing is not changed before the fourth day. The patient remains in the hospital for one week.

During the operation vitreous is likely to escape on two occasions; before the delivery of the lens or as the last of the lens leaves the eye a little vitreous sometimes follows. In the former instance pressure is kept up on the cornea and a broad spatula is plunged deep into the vitreous back of the lens, and the lens is then delivered with continued pressure on the cornea. It is during this manœuvre that the capsule may burst; it can then still be extracted by grasping it with anatomic forceps, or the cataract is extracted and the capsule remains. The vitreous then frequently returns of itself or is snipped off.

I witnessed 104 extractions and followed the after-treatment as far as my stay in Jullunder permitted.

Every facility was offered me to study the method. Nearly all of the cases of this group were extracted without iridectomy. The early closure of the wound was noticeable. There was some conjunctival congestion probably due to the bichloride. Most striking and gratifying was the black pupil, freedom from iritic irritation and adhesions.

Partial prolapse of iris and incarceration was observed in 17.

Escape of vitreous in 3. (In 2 of these, on completing the section, the lens and some vitreous immediately shot out.)

Slight escape of vitreous, 10.

Suppuration, 2.

Hemorrhage (subchoroidal), 1.

By "slight escape" is really meant only a very small amount, a bead or two. Many of the extractions were done by me so that the percentage of vitreous-escape does not apply to Major Smith's statistics. In his skilful hands the number would be much lower, and, in his estimation, by the proper selection of cases it can be reduced to 5 per cent. The influence of this slight escape on the future of the eye is of course a question which cannot be solved off-hand; for this purpose a re-examination of many old cataract cases is now being made at Jullunder. The difficulty of properly replacing the iris, owing to the greater chance of prolapse of vitreous, with the possibility of subsequent inflammatory dangers from incarceration, may be a fault of the method.

The advantages which the successful performance of this method assures are indisputable: I need only mention that no secondary operations are necessary and that a cataract is ready for extraction at any stage of maturity. The technical ability with which the operation is performed at Jullunder is marvellous; still it must be said that it is a much more difficult operation than the ordinary one.

A CASE OF FLEETING PARALYSIS OF SOME OCULAR MUSCLES.

By Dr. JESSE S. WYLER, Cincinnati, O.

A REVIEW of the literature upon the subject has failed to bring to my notice a report of a case exactly similar to this.

History.—On October 23, 1906, Dr. F. of Baltimore presented himself to me in a rather anxious state with a complaint of diplopia upon turning the eyes in certain directions. This he said had appeared two days previously and was steadily increasing in degree. After a certain amount of difficulty, I elicited from him that this was the second time he had suffered in this manner, the former attack lasting nearly six months and having occurred exactly two years previous to this. He was then under the care of Dr. Friedenwald of Baltimore who informed him that his trouble was at that time due to a paralysis of the external rectus of the right eye. He positively denied specific trouble, is temperate in the use of alcohol, and does not smoke. Former illnesses beyond an attack of pneumonia some years ago and the ordinary diseases of childhood have no bearing upon the case in hand. Never suffered from rheumatism.

Present Condition.—The patient is a well developed, but only fairly nourished, male of twenty-nine years. Facial expression shows a certain amount of worry and anxiety. Manner is restless and nervous. General physical examination is negative. Urine was pale amber, ordinary specific gravity, acid; no sugar, albumen, casts, pus, or fragments of mucus.

Examination of the Eyes.—The position appears superficially to be correct and they follow the guiding finger in apparently

normal fashion. The covering of one eye or the other does not produce increased secondary deviation. From that I judged that the insufficiency was not very great. As the patient claimed to see equally well with both eyes, I gave him a blue glass and told him to cover one of them. Then with the candle I took my place at a distance of about 1½ metres. Here the test according to Elschnig (Functionsprüfung) was duly recorded, and a diagnosis of insufficiency of the superior oblique together with the same condition in a lesser degree in the internal rectus of the left eye was made out. (The diagnosis was subsequently verified by Prof. Hirschberg of Berlin.) The point where the diplopia was first manifested was measured upon a perimeter (Fuchs's *Lehrbuch für Augenheilkunde*) and found to be 35° on the horizontal arc and 12° in depression. The diplopia laterally could be overcome by a 3° prism before the eye, the inferior defect requiring 9°. No *heterophoria present.*

The conjunctiva showed a rather severe ordinary catarrhal inflammation. Bacteriological examination negative. Pupils were equal and reacted well both to light and accommodation. Ophthalmoscopic examination failed to reveal any abnormalities with the exception of a small refractive error. Measurement of this:

R + 0.75 c Axis 10°n = +0.5 $\frac{5}{4}$ J1. at 11*cm.*
L + 0.50 c Axis 15°n = +0.75 $\frac{5}{4}$

Chalazion, pea-sized, in upper lid of left eye.

Treatment.—The conjunctiva was brushed with 1% silver and zinc 1%, and cold compresses of boric acid solution prescribed for home use. The above correction was ordered with + 0.5 spherical added to each lens, as the patient is necessarily required to do much reading and, as the double vision still disturbed him, he was instructed to wear a blind first over the one eye and then over the other. Aspirin, 3 grams daily, was also added to the treatment and patient was to return three times a week for application of the galvanic current to the inner-upper part of the orbit.

October 30th.—Three applications of electricity. The perimeter measurement shows an improvement in adduction of the eye, no diplopia until candle reaches 40°. The superior oblique does not respond so readily, although nearly 18°

can be reached with fused vision. The conjunctiva is much improved and patient finds the glasses restful for his work.

November 5th.—Electricity and aspirin continued. The insufficiency of the internus has vanished and the superior oblique depresses to 25° without trouble. Patient still reads with a blinder.

November 13th.—Muscles have fully recovered their former power and not the slightest diplopia remains. All symptoms have disappeared except an occasional exacerbation of the chronic conjunctivitis. A trip to the south was suggested in order to build up the somewhat weakened nervous system but did not meet with hearty concurrence. I have seen my patient several times since, the last meeting being April 25, 1907, and his eye still remains in good condition.

The interesting feature of the above case is not in the rapid convalescence, many cases having been reported by Landolt, Hirschberg, Sachs, and others, but rather the obscure etiological element which has brought about this insufficiency twice in the same individual, although affecting different muscles, and the nomenclature which should be used in the description of like complications. The condition cannot be brought under the head of recurrent paralysis, such as reported by Senator (1), Vissering (2), Pel (3), Marina (4), etc., for in these cases it was always the same group which was re-infected, and in the above, first the external rectus of one eye, followed, after a lapse of two years, by two distinctly different muscles in the other eye. Then again it cannot be considered a case of alternating paresis, for in this disease the paralysis affects progressively one of the other muscles, without any period of absolute freedom from symptoms. Such have been reported by Marina in his book upon the "Multiple Eye Motility Disturbances"; by Bono (5), and Bemhardt (6), and the same conclusion is reached by both, that affections of this nature are probably always part of a general disturbance which comes sooner or later to the surface.

The first case of recurrent paralysis was reported by Gübler, 1860, and this was followed by many other investigators. However, they reached pretty nearly the same conclusion summed up by Schmidt-Rimpler, that practically all cases show premonitory signs of headache or facial pains, and so the term "Migraine ophtalmoplégique," designated so by Charcot (6), comes into consideration. However, his case, as do those of Moebius, Schmidt-Rimpler, Uhthoff, and Senator (8), reports the typical migrainous onset followed by paralysis of the third nerve or its branches, but these facts do not at all coincide with the aforementioned history.

Then again as mentioned by Luell (9) and Ormerod (10), only most rarely do you not find recidival symptoms, no matter how slight, between attacks. About my case, I know that Dr. Friedenwald pronounced him cured, and at present, after the most careful examination by all methods, I find absolutely no signs of the foregoing condition.

In reviewing the literature, a case which approached mine in similarity is one of Ormerod's (10) where first we find the oculomotor, and in the next attack the 6th, affected. Schmidt-Rimpler cites this case as one of the rarest examples of paralysis going from one nerve to the other.

Priestley Smith considers periodic paralysis due to the accumulation of uric acid; others have claimed errors of refraction, worms, and nasal stenosis as main causes, but these must be looked upon with caution for there is almost invariably an organic lesion at the bottom of it. However in the case presented none of the above factors could even be invented to suit the case.

Stilling (12) reports a case in which his patient, a young girl of fourteen, had recurrent attacks involving the entire third nerve, with no etiological factor discoverable, and speedy recovery. On quoting the statistics, he found 6 cases reported with only 4 going to autopsy,

and all of these showed marked anatomical anomalies:

(1) Plastic exudation around the nerve trunk.

(2) Gray granulations containing tubercle bacilli around the nerve trunk.

(3) Fibro-chondroma of the nerve.

(4) Fibroma of dura involving entire nerve.

How closely this approximates my case you must judge. Cases have been reported by Leslie Paton but not published, of ocular paralysis with rapid resolution, in which cases no other signs of multiple sclerosis were present at the time, but in whom, subsequently, the pathognomonic symptoms became marked. This he explained by the presence of a temporary œdema and infiltration destroying the myelin sheath of the nerve fibres and thus destroying its conductivity. Afterwards the products of this inflammation are absorbed and with the cylinder remaining intact the power of the nerve is resumed after its slight loss of function. This may or may not be a solution, but I am not in a position to refute it.

Dr. Joseph Meller of Vienna related a very similar case to me, which he had seen in private practice some years ago. In 1897 a young married woman twenty-five years of age came to him with an abducens paralysis of the left eye. No etiological factor discoverable, and a prompt recovery ensued after a treatment of four weeks with ordinary medicaments. Three years later she again consulted him because of a diplopia which proved to be the result of a weakness of the externus of the right eye. Prompt convalescence. In 1904, just seven years after the first attack, a complete hemiplegia of the right side manifested itself. This also disappeared, but in its place the nystagmus, scanning speech, and tremor of a typical multiple sclerosis were left. In this case the fleeting paralysis was the percursor of a general condition which only appeared after considerable time. At present it is impossible to say that my patient will develop a like disease later in life.

Probst, in the *Deutsche Zeitschrift für Nervenheilkunde*, Bd. xiv., p. 406, shows that in the 35 cases under his care the first symptom of an insular sclerosis was a slight insufficiency upon the part of the eye muscles.

Wilbrand and Sänger, vol. i., p. 194, did not find their percentage as great as the above. They collected 68 cases of multiple sclerosis and found early eye symptoms in 18 of them. Of this number, 14.7% showed marked ptosis in conjunction with other defects, but always the conditions were rather obscure, the paralysis not being distinct or pronounced.

Whether or not my patient will develop a general condition which will readily simplify the case remains to be seen, for as yet nothing constitutionally has been determined. Was it a manifestation of the influenza bacillus, or due to exposure of some kind? I cannot answer, but he was suffering from no other symptoms of this disease at the time I saw him. Prodromal symptoms of early multiple sclerosis seem to have more weight than any of the other conclusions, and possibly our suspicions may some day be verified.

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OPTIC NEURITIS AFTER DISEASE OF THE POSTERIOR ETHMOIDAL CELLS.[1]

By ARNOLD KNAPP, M.D.

L. B., nineteen years of age, was seen on December 1, 1905, with the history that two weeks ago the sight in the right eye had become suddenly affected. She also had suffered from nausea and frontal headache.

Examination.—The right eye presents the picture of a pronounced neuro-retinitis with a radiating figure of white lines and dots about the macula. V=$\frac{20}{70}$. F. periphery normal; central relative scotoma for white and colors of 5°. No pain on moving the eyeball. The left eye is normal.

The nose revealed the condition of ozæna. The lower turbinates were atrophic; the middle turbinates were small, wedged up against septum, and covered with scabs and pus.

The anterior half of the right middle turbinate was resected. This was soon followed by a greater escape of pus, and on the following day the vision has improved to $\frac{20}{60}$ and there was less circulatory disturbance on the papilla. Subsequently more of the middle turbinate was removed and the posterior ethmoidal cells opened up; the discharge came from this region. The sphenoidal ostium was not exposed. In the course of the next few weeks the vision gradually returned, the changes in the optic nerve and retina disappeared, and the discharge from the ethmoidal cells diminished. After seven weeks the sight was normal and the eye-ground had resumed its healthy aspect.

Onodi[2] has repeatedly drawn attention to the not in-

[1] Patient demonstrated before Section on Ophthalmology, New York Academy of Medicine, Nov. 18, 1907.

[2] Onodi, *Der Sehnerf und die Nebenhöhlen der Nase.* Wien, 1907, Hölder. (See book notice at end of this issue.)

frequent close anatomic relation of the posterior ethmoidal cells to the course of the optic nerve from the skull to the orbit. While the intervening wall between the optic canal and sphenoidal sinus varies from 1 to 12*mm* in thickness, the dividing wall between this canal and the posterior ethmoidal cell may be as thin as tissue paper or measure 1 to 2*mm*.

Of particular interest in these cases is the manner in which the optic nerve is involved and the presence of a central scotoma. A central scotoma always seems to be present if the case is examined early enough, and the optic-nerve lesion falls into the group of retrobulbar neuritis.

No anatomic examination of a case in question has been published until Birch-Hirschfeld's recent article on "Sehnervenerkrankungen bei Erkrankung der hinteren Nebenhöhlen der Nase," which appeared in *v. Graefe's Archiv*, vol. lxv., No. 3, p. 440, 1907. In this case a carcinoma of the posterior ethmoidal cells had perforated into the orbit at the apex and caused exophthalmos and optic neuritis with central scotoma. Histological examination found venous stasis due to compression of the orbital veins by the tumor and isolated disease of the papillo-macular bundle posterior to the site of entrance of the vessels into the optic nerve. This consisted in an œdema of the optic nerve, swelling and proliferation of the glia cells, and disintegration of the nerve fibres. Its cause and localization depended upon venous congestion and toxic action on the nerve fibres, the latter resulting from inflammatory changes present in the tumor.

This author believes that the visual disturbance (central scotoma) in disease of the posterior nasal accessory cavities has a similar origin. The venous stasis is explained by an extension of the inflammation to the blood-vessels at the apex of the orbit and a direct toxic action on the optic nerve is probable.

CONCERNING THE ANATOMIC BASIS OF BLINDNESS FOLLOWING ORBITAL ABSCESS.

By Dr. MARTIN BARTELS, Marburg.

Translated from Vol. LVI., No. 3, of the German Edition, by Dr. Alfred Braun, New York.

(*With one diagram in text, and six colored drawings on Appended Plates XIII-XIV.*)

THE amount of pathological work done in regard to the causation of blindness resulting from orbital abscess is not very large. According to Reis, who collected the literature on this subject, Horner found a perineuritis with new-formed blood-vessels. Nieden found a serous exudate in the nerve-sheaths. Panas and Leber saw a degeneration of the nerve. Oeller found an acute necrosis in the orbital portion of the nerve, with a resulting interstitial inflammation. Although he found no bacteria, yet he considered the necrosis to be of bacterial origin. Weiss found an inflammatory œdema. Reis made the following observation: after an infection of the upper lip, there resulted an orbital phlegmon, followed by death from streptococcus and staphylococcus septicopyæmia, on the tenth day. On examining the eyes, he found on both sides, in the lamina cribrosa, an abscess, containing many bacteria. He considers the abscess to have been caused by a bacterial embolus, reaching the small vessels in this region, through a venous channel. The central vessels were normal.

Otschapowsky produced experimental orbital abscesses in dogs, by injecting virulent cultures of staphylococci and streptococci. He found that the inflammatory process can extend from the orbital cellular tissue to the optic nerve, and produce a typical picture of optic neuritis. The rapid and permanent abolition of function, which is observed with the severe abscess forms, especially after erysipelas, is explained by an acute inflammatory œdema of the nerve and its sheaths.

It is seen, therefore, that the affections of the optic nerve may be very varied. Furthermore, the explanation of some of the findings is wanting, *e. g.*, of the necrosis and the œdema.

The following case will perhaps explain some points. It also shows how necessary it is to examine the entire optic nerve, in serial sections, in order to obtain a clear picture. I refer to the third case of orbital phlegmon, which I reported at the meeting of the Marburg Medical Society, on Nov. 14, 1903. (The report appeared in the *Münch. med. Wochenschrift*, 1906, p. 98.)

A girl, twelve years of age, was operated upon for left-sided sinus thrombosis following otitis media. (See Prof. Küttner's discussion of my paper, *Münch. med. Wochenschrift*, 1906, p. 99.) The left jugular was ligated, and the mastoid opened and found to contain ill-smelling pus. The middle ear contained cholesteatoma. An epidural abscess was found, as well as a thrombotic sigmoid sinus. A purulent thrombus was removed, and a return flow obtained. On the next day, the patient felt well. On the second day, there was swelling of the lids and exophthalmos on both sides, more marked on the left side than on the right. On Oct. 6th, three days after the operation, I saw the patient for the first time. The lids were œdematous. Marked chemosis. Eyeball immobile. Fundus normal, except for pallor of the disk. The swelling of the lids receded, the exophthalmos increased, and the eyes were almost immobile, in a position of divergence.

On Oct. 3d there was slight venous congestion in the right

eye. On the 10th the disk was prominent, and the edges were blurred. The vision was normal, but there was visual aphasia. Temperature was 39.9° C., with slow pulse. A diagnosis of abscess of the temporal lobe was made, with orbital phlegmon, following thrombosis of the cavernous sinus. The venous congestion in the right fundus increased. The veins in the lids of both eyes were dilated.

On October 12th an incision was made in both upper lids, and large quantities of foul-smelling pus evacuated. In spite of drainage, the exophthalmos increased.

On October 15th and 16th there was choked disk in both eyes. Vision is normal. Visual aphasia. She cannot name objects which are shown to her, but can point them out, when they are named.

On October 17th the mastoid wound was opened, and a large abscess in the temporal lobe of the brain evacuated. Both lower lids were incised, and a large quantity of pus evacuated.

On October 18th there was amaurosis and immobility of the pupil, in the right eye. With the left eye, coins were recognized.

On October 21st the right fundus showed a whitish discoloration of almost the entire retina, especially in the macular region. The margins of the disk were very indistinct. On the disk and in the macular region there were horizontal linear hemorrhages.

After repeated incisions, the exophthalmos receded in the next few days. The general condition of the patient improved.

On November 3d there was sudden prostration, with high fever. She died on November 7th.

The autopsy (performed by Dr. Schridde) showed the following:

An extensive abscess of the left parietal and temporal lobes of the brain, with compression of the left lateral ventricle; dilatation of the right lateral ventricle. In both transverse sinuses there were thick clots, without thrombus formation. The anterior third of the left superficial petrosal sinus was entirely obliterated. Both the right and left cavernous sinuses were plugged, as well as the circular sinus of Ridley. There was superficial caries of the petrous bone.

Orbital abscesses on both sides. Double broncho-pneumonia.

Staphylococci, streptococci, and saprophytes were found in the pus.

The contents of both orbits were fixed and hardened in Müller's fluid, and stained with carmine. The specimens were embedded in celloidin, and serial sections made. A portion of the contents of the left orbit was ruined in the preparation.

On the right side, the following condition was found:

The orbit contains several large abscesses, extending from the lids back to the optic foramen. No bacteria were found. The abscesses lie within a funnel formed by the extrinsic ocular muscles. The abscesses do not press on the optic nerve. The pus is located principally in the fatty tissue, which contains numerous thrombotic vessels. The muscles are not involved, except in the posterior portion, near their insertion, where there is slight infiltration, and a few thrombotic vessels. The orbital fascia is nowhere perforated.

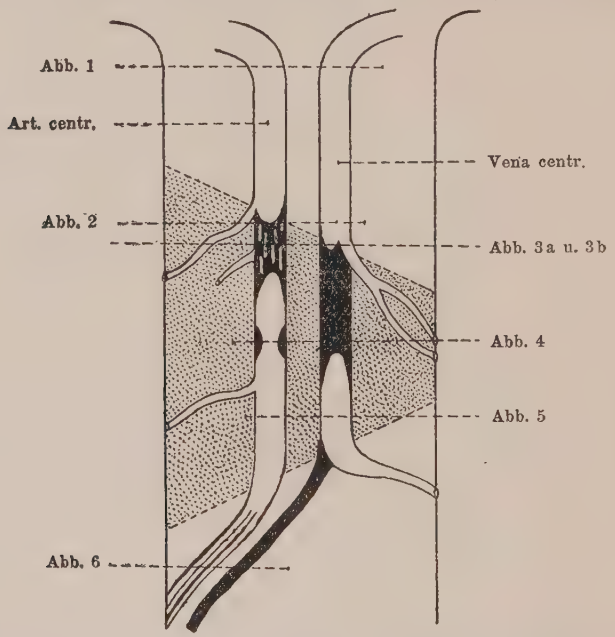
The larger arteries of the orbit, especially the ophthalmic artery, are normal. In a few of the smaller vessels, which are obliterated, it is impossible to distinguish whether they are veins or arteries.

The larger veins, in the posterior part of the orbit, especially the ophthalmic vein, are obliterated by organized thrombi. In several places, small hemorrhages are seen near the veins. The nerves, outside of the optic nerve, are normal.

THE CENTRAL VESSELS—THE CENTRAL RETINAL ARTERY

The anterior extremity of the central artery, within the lamina cribrosa, is normal, for a distance of 2.5*mm.* (See Fig. 1.) From this point, the artery rapidly grows narrower as a result of an irregular thickening of the endothelium. A short distance in front of this narrowing, a small patent artery passes outward toward the pia. In the following sections, the artery is entirely obliterated by new-formed tissue, containing many small vessels. (See Fig. 2.) The adventitia is thickened and infiltrated by small cells. Numerous small arteries, narrowed by endarteritis, pass from the central artery to the nerve septa.

The complete obliteration of the artery through an organized mass, with formation of new vessels, can be followed for a distance of 0.8*mm*. In the following sections, the endothelial hypertrophy diminishes, and the vessels within the hypertrophy become larger, and filled with blood. Then a centrally-placed, blood-filled lumen appears, whose walls are formed by an irregular endothelial hypertrophy. The endothelial thickening then diminishes rapidly, so that soon an artery of normal width, filled with blood, with only a slight ad-



The dotted portion indicates the extent of the necrosis in the optic nerve; in the middle, the course of both central vessels is indicated by two pairs of parallel lines. The black portions indicate the extent of the thrombosis. The irregular newly formed vascular lumina, in the artery, are indicated by short white lines. The numbers correspond to the numbers of the colored drawings.

ventitial infiltration, is seen. The lumen contains blood or small clots consisting of white cells. (See Fig. 4.) The lumen of the artery then remains free, except for a few button-shaped excrescences of the endothelium. In a few places the endothelium is covered by semilunar masses, consisting of granular material mixed with white and red blood cor-

puscles and partly covered by endothelial cells. These are probably mural thrombi. (See diagram, p. 28.) In another portion, the intima is fibrillated, as is well shown by the Weigert elastic stain, and between the fibres lie red blood-corpuscles. The lumen is filled partly with fibrin and partly with normal blood. From this patent portion of the artery, several large arteries pass to the pia. The artery remains normal up to the point where it bends around to leave the nerve. The bend is not sharp. In this portion of the artery, the entire wall is fibrillated by numerous hemorrhages. The vessel is surrounded by hemorrhages. The lumen is wide, at first, and filled with blood. A few sections behind, it shows irregular endothelial masses, containing granular or homogeneous masses and blood-corpuscles. (See Fig. 6.)

The artery is surrounded by cellular infiltration.

The vessel divides into two similarly fibrillated arteries. The smaller of the two shows hyaline degeneration of the wall. The other passes into the pia. Its lumen is filled partly with blood-corpuscles, and partly with a granular clot. The smaller artery passes a short distance farther into the nerve. The lumen of both vessels is finally patent, and the walls normal.

THE CENTRAL VEIN.

The central vein, within the papilla and lamina cribrosa, is normal. (See diagram.) It remains normal for a distance of 3.5*mm* behind the lamina. At this point, the wall becomes thickened through small round-celled infiltration, especially on the side adjacent to the artery. The vein divides here into two branches (see diagram), whose lumina are at first patent. Both branches are surrounded by dense round-celled infiltration. The one vein, well filled with blood, passes toward the pia, dividing into a number of small branches. The larger central vein is entirely occluded by a mass of tissue composed of round and endothelial cells. The round-cell infiltration is so dense that the remains of the vessel-wall can scarcely be recognized. Farther backward, the round-cell infiltration disappears, and the lumen of the vein is filled with a tissue containing very few nuclei, and numerous small capillaries. This fully organized oc-

clusion of the vein occurs in the region where the artery has again a normal calibre. The vein is occluded for a distance of 1.6*mm*. In places, the vessel wall cannot be distinguished, except in preparations stained with Weigert's elastic stain, which shows connective tissue containing small vessels, surrounded by finely fibrillated elastic tissue. In the following portion of the vein, the wall becomes more plainly visible, and the lumen contains endothelial masses, between which large blood-filled spaces lie. In the next few sections (25μ thick) there are only a few slight elevations projecting into the lumen, which is filled partly with blood and partly with granular masses. Two sections farther, the lumen is normal, and filled with blood. The adventitia is fibrillated by hemorrhages. At the point where the artery bends outward, the vein divides into several branches, of which one large well-filled branch passes outward to the pia in a direction opposite to that taken by the artery, while several smaller branches accompany the artery. The latter veins show an endothelial narrowing, which rapidly increases up to complete occlusion.

THE OPTIC NERVE.

The papilla and the lamina cribrosa are normal. A short distance behind the lamina cribrosa two small arteries are seen in the pia, which show a marked narrowing due to endarteritis. The adjacent peripheral zone of the nerve is necrotic. This necrotic area increases in size rapidly, so that a few sections farther on it includes a large sector of the nerve. Here the central vessels are still normal.

The necrotic tissue stains very poorly. (See Fig. 3.) The markings of the nerve-fibre bundles can no longer be distinguished. In place of the nerve fibres we see granular masses. The nuclei of the connective-tissue septa stain very poorly. No vessels are seen at first, in the necrotic portion. The necrotic portion is separated, here, from the normal nerve tissue, by numerous vacuoles. (See Fig. 3b.) A slight round-cell infiltration is seen only near the pia, especially near the small thrombosed vessels. The pia itself, as well as the arachnoid, are thickened and infiltrated with round cells, in the neighborhood of the necrotic area. The

intervaginal spaces are obliterated by adhesions. There is no lymph-stasis.

At the level where the thrombosis of the central artery begins, the necrotic area reaches as far as the central vessels, and at the level of the venous thrombosis it involves the entire cross-section of the nerve. (See diagram.)

At the beginning of the arterial thrombosis are seen several small arteries, narrowed by endarteritis, passing to the pia, along the demarcation zone of the necrotic area. At the beginning of the narrowing of the central vein are seen numerous well-filled small veins in the septa of the necrotic area, and many hemorrhages. (See Fig. 3b.)

Where the entire cross-section of the nerve is necrotic, wedge-shaped networks of hemorrhages pass from the pia, following the septa. The pia contains congested veins. In the region of the central vessels, a round-cell infiltration of the connective tissue is seen.

The necrosis of the nerve ends at the level where the central vessels pass outward. (See diagram.) From this point to the optic foramen the nerve is normal.

THE RETINA.

The nerve-fibre layer and inner nuclear layer contain small hemorrhages. Between these are seen small vessels, occluded by endothelial hypertrophy. It is impossible to determine whether they are arteries or veins. Numerous dilated veins are also seen.

Only one frontal section of the contents of the left orbit was preserved. It begins a short distance behind the lamina cribrosa, and extends backward about 0.5*cm.*

Several large abscesses lie within the funnel formed by the extrinsic eye muscles. The orbital fascia is infiltrated at one point. The muscles are normal. Several large veins are thrombosed.

The optic nerve, its membranes, and central vessels are normal.

It is impossible to judge from the preparation whether the vessels are occluded by emboli or thrombi. An embolism is not likely. The older changes in the posterior

portion of the artery seem to indicate that the dense organized occlusion, nearer the ball, developed in the same way, namely through endarteritic mural changes.

The microscopic picture shows that the vein was involved first, as it shows older changes. In what manner the venous thrombus was formed, it is impossible to say. A direct continuation from the orbital thrombo-phlebitis, can be excluded, as there is a normal portion of vein between the two. It is probable that the wall of the vein was damaged through thrombosis or embolism of the vasa vasorum, possibly through a bacterial embolism. Accompanying this change in the wall, there was congestion of the vein, resulting from closure of some of the orbital veins. In this way, a venous thrombus was formed. The congestion resulted in compression of the arterial wall, with thrombus formation in the artery. The arterial thrombus is nearer to the ball than the venous thrombus. It is possible, however, that the inflammation passed directly from the wall of the vein to the arterial wall, thus resulting in a thromboarteritis.

The more recent, posterior thromboarteritis is undoubtedly inflammatory, as there is more marked infiltration here. There is fibrillation in the wall, and clots and desquamated endothelium in the lumen.

In addition to the occlusion of the central vessels, we have an extensive necrosis of the optic nerve. The extent is indicated by the dotted area in the diagram. The necrosis begins in the periphery of the nerve, a short distance behind the lamina cribrosa. Small thrombotic vessels in the pia and septa, in this situation, might explain the necrosis. The necrosis involves the entire cross-section of the nerve, in the region where both central vessels are occluded. (See diagram.) In the proximal, orbital portion of the nerve, after emergence of the central vessels, we see here and there patches of necrosis near the surface of the nerve, in conjunction with small thrombosed pial vessels.

Near the occlusion in the central vessels we see, in addition to the degeneration of nerve fibres, numerous hemorrhages. From the picture of the necrosis, as well as its position in relation to the vessels, it is evident that we have not to deal with a bacterial or purulent necrosis, but with a death of the tissue, resulting from deficient nutrition, on account of occlusion of the afferent and efferent vessels. The necrosis showed no inflammatory changes. The injury could not have come through the nerve-sheaths, since they show neither œdema, nor inflammation, nor hemorrhage.

Mechanical pressure of the abscesses on the nerve is out of the question, as a glance at Fig. 3 shows. The abscesses do not touch the nerve. Furthermore, we know that the nerve can stand considerable pressure in the orbit, without being injured.

The lesions in the central vessels were undoubtedly the primary changes, as the histological picture shows that they are older than the necrosis. Therefore we cannot consider the possibility mentioned by Oeller, that perhaps the optic nerve becomes necrotic first, through bacterial invasion, and then the vessels became thrombosed, secondarily.

Whether Otschapowsky's experimental result of injury to the optic nerve, with orbital abscess, has a similar significance to our case, seems problematical to us. In the abstract (the original is not accessible to me) it is stated that the rapid and permanent loss of function with severe abscesses is explained by an acute inflammatory œdema of the optic nerve and its membranes. Does this mean that the inflammation passes from the neighborhood of the nerve to the sheaths, and then to the nerve itself? It would then correspond to Oeller's case. In our case it was different. The dura evidently protected the nerve against infection. The necrosis was due to occlusion of the vessels.

It is peculiar that, although there is complete de-

struction of one portion of the nerve there are sections, distal as well as proximal to the occlusion of the vessels, where both vessels are patent In the lamina cribrosa the vessels show no changes whatever. (See Fig. 1.) If the entire nerve were not examined, these lesions might easily have been overlooked. This case teaches us that the entire nerve should always be examined. The patency of the vessels was due to the formation of collaterals.

The anatomical findings agree with the clinical picture. In the ophthalmoscopic picture were seen venous congestion, hemorrhages, and anæmic areas in the macular region. The latter are explained by the thrombosis of the small arteries of the retina, which were shown in the microscopical picture. The fairly normal papilla also corresponded to the histological findings. The vessels of the papilla were normal, or possibly slightly narrowed. (See Fig. 1.)

Furthermore, it was seen in the history that in the right eye there was, at first, a venous congestion. This agrees with the fact, as deduced from the anatomical picture, that thrombophlebitis of the central vein occurred first. The narrowing of the vein occurred gradually; and before the vein became entirely occluded, collateral branches were formed. This occurrence would explain the absence of larger hemorrhages in the fundus, such as usually occur with thrombosis of the central vein.

In the later stages, extensive intense anæmia of the retina was seen. This condition was probably due to the complete occlusion of the central artery, in the orbital portion of the optic nerve, and thrombosis of some of the individual retinal vessels. At a later date, a collateral circulation was formed for the artery, also, so that the papillary arteries, although narrower than normal still, became visible again.

The blindness, which occurred on the 14th or 15th day

of the disease, cannot be explained so easily. The artery was not entirely occluded at this time, since the anæmia was first seen later. It is probable, however, that at this time the nerve fibres, in the retrobulbar portion of the nerve, were so impaired in their nutrition, through thrombovasculitis of the central vessels, that they no longer functionated. The necrosis followed, a short time after. That the light conduction was really interrupted, was proven by the immobility of the right pupil.

At the last, the loss of vision was due to occlusion of both central vessels, with necrosis of the optic nerve, and partial thrombosis of the vessels of the macula. The changes in the macula, are, however, not necessary to explain the blindness. It is possible to have blindness without any changes being seen in the fundus, as a collateral circulation may form, coincidently. Later, of course, an atrophy occurs.

The orbital abscess, in our case, was undoubtedly due to an extension of a septic thrombosis of the sinus. For this theory, speaks the occlusion of the cavernous sinus and the superficial petrosal sinus of the left side, as shown at autopsy; also the thrombosis of the orbital veins, found microscopically.

The œdema of the lids and the exophthalmos were due to two factors—the obstruction to the venous outflow, and the infectiousness of the purulent inflammation. It is remarkable that in spite of the thrombosis of the cavernous sinus, which was probably present in the first few days, there was no choked disk. This agrees with other observations in cases of sinus thrombosis. With the occurrence of the abscess in the temporal lobe, in our case, choked disk appeared, especially on the left side. This case might be cited to support Schmidt-Rimpler's explanation of choked disk.

Our observation contradicts the statement of Mitvalsky that in thrombophlebitis of the orbit, resulting from

extension from the intracranial sinuses, the vision is rapidly lost, because the bacteria enter the central vein immediately. Schmidt-Rimpler opposes this theory. In our case, vision remained intact in one eye, in spite of the septic venous thrombus. In the second place, even in the blind eye, it is not likely that the bacteria reached the thrombus through the lumen of the vein.

The nerves and muscles of the orbit were scarcely affected, although in close relationship with large abscesses for almost two months. Even where the abscesses were separated from the muscle tissue only by fascia, there was only the slightest infiltration.

This finding does not agree with the experimental results of Otschapowsky. We found the extrinsic muscles always more or less affected.

Deductions:

1. Blindness with orbital abscess may be caused by retrobulbar necrosis of the optic nerve, due to thrombosis of the pial vessels, and thrombosis of the central vessels, in parts.

2. Through formation of a collateral circulation, both central vessels may regain their patency before and behind the thrombotic occlusion. Consequently, in spite of the thrombosis of the central vessels, the vessels on the papilla may appear to be normally filled.

3. The outer ocular muscles and nerves may remain normal, in spite of prolonged orbital abscess.

EXPLANATION OF THE PLATES.

No. 1. The central artery and vein, within the lamina cribrosa; they are normal, except that their lamina are somewhat narrowed.

No. 2. The vein is normal; a few dilated collateral veins are seen near the central vessels. The artery is occluded by an organized thrombus, with formation of new vessels. Their surroundings are infiltrated with cells. A few nerve-fibre bundles, in the vicinity take the stain poorly, on account of necrosis. (Section through the optic nerve, about 2.5*mm* behind the lamina cribrosa.)

No. 3a. Cross-section through the orbit. The abscesses within the funnel formed by the muscles stain deepest red. The muscles

are intact. The optic nerve is stained poorly, for the most part, on account of necrosis. (Section about 3.0*mm* behind the lamina.)

No. 3b. Cross-section of the optic nerve seen in 3a, with greater magnification. Only a small section shows normally defined and stained nerve-fibre bundles. The greater part has taken the stain poorly, on account of necrosis; the outlines of the nerve-fibre bundles can no longer be seen. In the necrotic portion are dilated veins.

No. 4. Organized thrombus of the vein; in the artery is normal blood, with a few clots. (Section about 5.5*mm* behind the lamina cribrosa.)

No. 5. Artery and vein normal, behind the thrombotic occlusion. In the artery, a mural clot. (Section about 8*mm* behind the lamina.)

No. 6. The artery near its exit from the optic nerve, in the pia, surrounded by hemorrhages. In the lumen of the artery, irregular endothelial hypertrophies, with blood-corpuscles between. Nearer the vein, a large accompanying vein (the central vein?) occluded by an organized thrombus.

REPORT OF THE TRANSACTIONS OF THE SECTION ON OPHTHALMOLOGY OF THE NEW YORK ACADEMY OF MEDICINE.

By Dr. H. W. WOOTTON, Secretary.

MEETING OF MONDAY, OCTOBER 21, 1907. DR. J. H. CLAIBORNE PRESIDENT, IN THE CHAIR.

Report of Cases and Demonstrations.

Dr. J. E. Weeks reported a case of **myxosarcoma of the orbit**. The patient was a boy five years of age. Fell nine weeks ago, striking on the back of the head, inflicting a severe scalp wound. One week later the right eye protruded. The patient was taken about to the various hospitals. At the Manhattan Eye, Ear, and Throat Hospital an exploratory Kroenlein operation was made. No neoplasm was found. Wound closed.

Patient was seen by Dr. Weeks on July 23, 1907. At that time the right eye was displaced forward and slightly inward. Lids swollen and of a purple hue. Veins of lids and conjunctiva much enlarged. Vision much impaired. A faint bruit could be heard over upper part of temple. No pulsation. The history of development of exophthalmus after a fall and of failure to find a tumor mass on exploratory operation, in connection with the bruit, made it appear possible that an aneurismal varix might be present. In order to give the patient the benefit of the doubt, the common carotid was tied by Dr. Charles N. Dowd on July 26th. This arrested the development of the exophthalmus for ten to fourteen days. Dr. Weeks left the city on August 3d, and did not return until September 22d. During this time the mass

developed with extraordinary rapidity, projecting far over the face. Although there was no hope of saving the patient's life, it was thought best to remove the mass, because of interference with nasal breathing from pressure. Operation October 1st, under ether narcosis. The bleeding was profuse, but not alarmingly great. On removal, it was found that the roof of the orbit was intact, but the ethmoid cells were exposed and the tumor mass had extended into the antrum. The mass removed weighed 280 grams. Prognosis very unfavorable.

Dr. F. J. PARKER gave a demonstration of **Tscherning's method of observing the capillary circulation of the retina.**

Dr. Parker stated as follows:

There is an ocular phenomenon which some of us have probably observed at times, for an instant only, when looking directly at the sun or some source of brilliant light. The appearance is that of a mass of colorless moving spots, going in many different directions.

This phenomenon was first described by Haidinger, who, in looking at the sky, through a Nichols prism, observed small yellow hoops, and, between these, light blue spots. If the prism was rotated, the hoops would accompany the rotation, and succeed each other. This phenomenon was studied by Brewster and Helmholtz, with no success, and they held that it was only visible to certain eyes. Twelve years later, Helmholtz observed the hoops of Haidinger, and from that time until now no further observations have been recorded or elucidations presented of this discovery.

During the past summer, Dr. Tscherning, while experimenting with the Cooper-Hewitt mercury vapor lamp in his laboratory at the Sorbonne in Paris, found that on looking at the lamp through a violet-colored screen of gelatine he was enabled to see for prolonged periods these innumerable moving bodies in all parts of the field of vision, except the blind spot.

Tscherning identifies these with the so-called hoops observed by Haidinger, Helmholtz, and others. His theory is that they are the white blood-corpuscles circulating in the capillaries of the retina.

Tscherning considers that with this source of illumination

and the use of this screen the red ray is eliminated, and, under such conditions, the white corpuscles are thrown into shadow on the deeper layers of the retina, forming an entoptic image. He also believes that a further study of this will have an important bearing upon our knowledge of color perception as advanced by Young, whose theory is that each nerve fibre of the retina is composed of three fibres of the second order, each of these three fibres being provided with a special terminal organ and a special central organ, an irritation of the first fibre producing red, of the second, green, and of the third, violet—these being the three primary colors, the secondary colors being produced by a combined irritation of two primaries.

Tscherning thinks that this phenomenon shows that the layer that precedes the blue is the most superficial layer of the retina.

Dr. George Sloan Dixon gave a demonstration of a new method of **stereographing macroscopical eye specimens in glycerine jelly under glass**.

The following is an abstract:

The apparatus consists essentially of a copying camera. The anterior end of the dark box is fitted with a sliding front board on which is mounted a large iris diaphragm such as is used for mounting, or attaching different-sized photographic lenses to a camera. The diaphragm is adjusted so as to cut off the light coming through the edge of the cup containing the eye. The cup is then placed in position, a neutral gray card is applied as a background, and the whole held firmly against the diaphragm by a spring so arranged as not to obstruct the light. The object is then focused in a position 3*cm* to one side of the centre, the camera is pushed out the window into a north light, preferably, the first exposure made, then the sliding front board carrying the specimen is pushed 3*cm* to the opposite side of the centre,—making a total displacement of 6*cm*,—when the second exposure is made.

A 4 x 5 Cramer slow isochromatic plate is used, with a Tropæolin ooo screen in front of the lens. As a 4 x 5 plate is very much larger than is necessary for the normal-size eye, he cuts the plate in half, making two 2½ x 4, which are exposed in a 4 x 5

holder with kits, one in one end of the holder, and the other at the other end of the holder on the opposite side, the holder being marked in a manner to enable him to tell where the plate is, so that the exposure will be in the middle of the plate.

After the plates have been developed, it is a comparatively simple matter to place them in proper position in a printing frame, mat, print, and mount them in the usual way.

In the discussion which followed, Dr. T. R. Pooley was sceptical in regard to the utility of ligating the common carotid in sarcoma of the orbit.

Dr. Johnson thought that the tumor might have started in the optic nerve, and in this manner have escaped observation at the time of the Kroenlein operation.

Dr. George Sloan Dixon stated that he had recently received a specimen of tumor of the optic nerve. It was nearly as large as the globe, and seemed to surround the nerve, without involving the globe itself.

Dr. J. E. Weeks stated that ligation of the common carotid was commonly performed in cases of sarcoma of the antrum, in order to control hemorrhage during the operation for removal, and also for its inhibitory action upon the growth of the tumor. He thought it not only justifiable but proper in some cases of sarcoma of the orbit. The specimen, so far as it had been examined, did not involve the optic nerve. He would certainly operate at the earliest stage possible in another case, as operation gave at least temporary relief.

In the discussion of Dr. Parker's demonstration, Dr. E. B. Coburn thought that the round bodies might be the red corpuscles.

Dr. Parker stated that their number would probably exclude this supposition, and that Tscherning considered that his violet glass excluded the possibility of the red corpuscles appearing.

Dr. Weeks stated that one theory was that the bodies were cylinders of blood, and not individual corpuscles.

Dr. E. S. Thomson presented a case of **sympathetic ophthalmia with gross specimen.**

The patient was a man, sixty-two years of age, suffering from a severe corneal ulcer in the left eye. When first seen, the whole lower two-thirds of the cornea was densely in-

filtrated, and there was considerable hypopyon. Paracentesis was done on July 27th, and the hypopyon evacuated. It at once reaccumulated, and was evacuated a second time on July 28th. He was treated by the usual means and the purulent condition was finally checked, but with extensive destruction of the corneal tissue below. August 10th, a Saemisch section was done to avoid perforation, and he was discharged August 27th, with a large leucoma of the cornea, and a small central spot of protruding iris. September 27th he came under the writer's personal care. There was a large, flat cicatrix, with a small black point of iris in its centre, in the left eye. The right eye had a well marked sympathetic iritis, with ciliary injection, and several adhesions of the iris to the lens. He was admitted to the hospital, the left eye enucleated, the right eye bandaged, and he was put to bed. Atropin was used in the right eye twice daily, and aspirin was prescribed in increasing doses up to 125 grains a day. Under this treatment the pupil dilated fully, and the iritis subsided in about two weeks. At present the eye is white, free from injection, with particles of exudate remaining on the lens, and a good deal of haze of the vitreous. Vision is 15/200. The case was presented in order to show what appears to have been the good effect of aspirin in reducing the iritic irritation. This is the second case of this kind that he had treated with aspirin, with good results. It is much less irritating than salicylate of soda, and has been well borne in both instances. The specimen of the left eye shows contracting exudates in the iris and ciliary region, and beginning detachment of the choroid and ciliary bodies.

Paper: **The artificial maturation of cataract.** By Dr. T. R. Pooley. (Abstract.)

The forms of cataract in which this form of operation is contra-indicated are: slowly sclerosing lenses, with few striæ; posterior polar cataract, and slowly forming cataract in myopic eyes, as well as all those cases where there is any indication of luxation of the lens, as shown by tremulousness of the iris. Before any of these procedures are undertaken, however, we should be sure that the tension is normal and the pupil dilatable.

The methods which have been described are as follows:

1st. Simple discission of the anterior capsule.

2d. Discission combined with iridectomy (Mooren).

3d. Discission and external massage.

4th. Iridectomy and external massage (Foerster).

5th. Iridectomy and internal massage (Bettman and Born).

6th. Simple paracentesis, with internal massage (Pooley, White).

7th. Simple paracentesis, with direct massage.

8th. Jocq's injection by Pravaz's syringe of fluid beneath the anterior capsule.

9th. Finally, a method practised by the President of this section, which is, in effect, a modification of Mooren's, and of which he is to present a detailed account.

Simple discission of the anterior capsule, which Knapp considered the most efficient of them all, falls short by ripening only the anterior cortex, so that considerable portions of the posterior cortex are apt to be left behind. Others do not share in this opinion, but consider this method the most dangerous of them all, on account of the inflammatory changes which may follow too rapid swelling of the lens, and by reason of increase of tension. Iritis, and even panophthalmitis, have followed the operation. The opening in the capsule may be either too small or too large. In the one instance, it may become plugged by cortex which has been squeezed out of the capsular wound and subsequently closes. In the other, glaucoma or inflammatory reaction is threatened. These same objections hold good in Nos. 2 and 3 of the list.

Regarding the fourth method, Foerster's operation is perhaps to be preferred, on the whole, to any other procedure. But to those who prefer the simple extraction the iridectomy would be a serious objection. Some fibres of the iris are likely to be pressed between the lens and cornea, and thus cause iritis. Mittendorf has recorded the loss of an eye. The epithelial coat of the cornea may be rubbed off. Foerster himself has called attention to injury of the cornea and iris, and dislocation of the lens. It may be well to add here that the latter danger should be included in all operations for artificial ripening.

The operation of direct massage can be done with or without iridectomy. Dr. Born, of this city, is stated by Dr. Pooley to have been the first person to propose and practise this method, which he does, after the accomplishment of the iridectomy, by making massage directly on the lens capsule with the knee of a squint-hook.

The operation of indirect massage, without iridectomy, so far as the writer knows, was first described by himself in the *Medical Record*, December 26, 1885, as a modification of Foerster's method. Before him, Candon, in an article on the artificial maturation of cataract, *Rev. gén. d'opht.*, 1883, says at the conclusion of his paper that maturation of cataract, when we intend to extract without iridectomy, may be done by making paracentesis of the cornea, letting the aqueous escape, when the lens will fall forward upon the cornea, and can afterwards be triturated from without. He does not state, however, that he had ever done this operation himself.

Dr. Pooley's method is based upon the fact, well known to those who have used cocain in operations upon the eye, that the aqueous humor escapes very slowly after puncture or incision of the anterior chamber, which led him to consider whether its use would not enable us to perform the operation suggested by Foerster without iridectomy. The obstacle against such a procedure, without iridectomy, is obvious. The pupil will contract, and both the lens and iris fall forward against the cornea. Thus the iris will be injured, unless the pupil is kept widely dilated during the next step of the operation, which consists in rubbing the cornea over the exposed surface of the lens.

In Bettman's operation (the fifth on the list), the technique of which differs somewhat from that of Born, the cornea is opened by a keratotome, iridectomy made, then gentle massage by passing an aluminum spatula into the anterior chamber under the iris, and making gentle massage directly upon the anterior capsule of the lens.

Jocq's method is new, and has not been sufficiently tested to permit an opinion of its value.

If we take into consideration the uncertainty of obtaining success in bringing about a complete opacity of the lens by

the methods above enumerated, the probable thickening of the capsule which may result therefrom, thus rendering the success of the subsequent extraction less favorable in securing good vision, together with the dangers and complications which may ensue, and, still further, that a great many operators are no longer possessed of the fear, which they so long entertained, of operating upon immature cataracts, we shall feel like falling in with the wise conclusion made by Knapp, when he says "many operators, the present writer included, prefer the risks of removing an immature cataract to any ripening operation."

A new procedure and instrument for the maturation of cataract. By Dr. J. H. CLAIBORNE. (Author's abstract.)

After describing Mooren's procedure, Dr. Claiborne stated that he had slightly scratched the anterior capsule with a cystotome to ripen the cataract in a patient, but the only result was a streak in the anterior capsule. This gave him the idea to construct an instrument with which a number of fine incisions could be made by needle points upon the capsule; the aqueous would thereby be brought into contact with the lens substance without causing protrusion of the latter through the capsule, and the cataract would ripen within a reasonable time and uniformly. The instrument is shaped like the agricultural harrow, with five needle points on the under surface, the forward point being a short distance from the nose of the instrument; the remaining four being arranged two on either side in a series from before backward.

The method was practised in one case as follows: A broad iridectomy having been done, the harrow was introduced by lifting the corneal lip of the wound with the tip of the instrument, which was then pushed in until the shaft impinged upon the corneal lip. The capsule of the lens was then incised by drawing the needle points up toward the lip of the wound. When the instrument had slightly emerged the procedure was repeated. The instrument was then withdrawn by lifting the handle upward and forward in order to avoid catching the

needle points in the wound. Nevertheless the anterior point caught slightly, but no harm was done. This was followed by slight iritis with adhesions and an accidental infection of both conjunctivæ. The cataract was mature after one week, but the extraction was deferred, as the eye was still red.

A second improved instrument has been made, The blade of the harrow comes from the handle at an angle of 45°, like the lance-shaped keratome. The blade is 9*mm* long and 3*mm* wide. The nose is slightly blunt, and on the under surface there are six needle points instead of five as on the first instrument. The first point is *mm* 1from the apex, two on each side in a series as before, and one in the centre between the two lateral series. These points are so sharp that they will readily lacerate the capsule with the gentlest pressure, but are not long enough to enter deeply into the lens substance.

The ease and rapidity with which the senile cataract was ripened in the above case have led Dr. Claiborne to suggest the employment of the same procedure in the **surgical treatment of high myopia.**

Discussion: Dr. W. B. Marpole stated that he had ceased to employ artificial ripening, and that he found no special difficulty in extracting sclerosed lenses, even when considerable cortex was still clear, and he preferred to operate on immature cataracts, rather than to ripen artificially. In this statement Dr. E. B. Coburn concurred.

Dr. W. E. Lambert stated, in regard to the maturation of senile cataracts, that it was unnecessary. A preliminary iridectomy, followed by extraction, was sufficient. In high myopia, the employment of Claiborne's instrument would be dangerous, without an iridectomy, and be preferred Fukala's original method of discission and subsequent extraction.

Dr. J. E. Weeks thought that the cases could be dealt with just as well without maturation. Iritis frequently followed this treatment, and in the cases presented by Dr. Claiborne, a mass of soft matter remained. If we did decide to ripen, he suggested that it would be better to remove a piece of capsule with the capsule forceps.

Dr. T. R. Pooley stated that ripening operations had rather

justly gone into disrepute. The hastening was very slow at best, and he would prefer to take his chances without ripening. One could ripen the anterior portions of the cataract, but the process does not extend very deep, and disappointment was apt to be experienced from the amount of capsule left behind.

Dr. MITTENDORF described a case in which a ripening operation had been followed by irido-cyclitis and loss of the eye. The lens was probably dislocated by trituration.

Dr. F. N. LEWIS was not very favorably inclined towards ripening. The irritation caused was more than was desirable. There was not so very much risk to be run in operating on immature cataracts, after all.

REPORT OF THE TRANSACTIONS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

By Mr. C. DEVEREUX MARSHALL.

THE PRESIDENT'S INTRODUCTORY ADDRESS.

Mr. Gunn first tendered his warm thanks to the Society for the honor implied in his election to the Presidential chair, and assured the members that he yielded to none in feelings of loyalty to the Society, whose interests he would do his best to serve. The first portion of the address was devoted to a review of the history of the Society, dating from the issue of a circular letter in February, 1880. He referred to the most important contributions to the Transactions, under various headings—physiological, surgical, clinical, pathological, etc. Passing on to the future, he said an exact knowledge of the etiology of affections of the cornea, iris, and choroid was much wanted, while they awaited an explanation of recurrent retinal hemorrhages in eyes otherwise seemingly sound, in persons whose general health was not manifestly at fault. If a diminished coagulability of the blood were found to be present, and that was kept at bay, it was reasonable to expect that the recurrence due to that cause would be checked; but such treatment had been disappointing. Opacities in the lens occasionally presented forms which did not seem explicable at all by our knowledge of its anatomy or its nutrition. Could these be accounted for? Prognosis was a very important matter to the patient, yet it was often uncertain, and must continue so. Yet if the ophthalmic surgeon knew a little more of the true nature of the different diseases which he had to treat, his knowledge

of their course and duration would be materially increased. In the past few years a great advance had been made as to the nature of infective agents, and the ways in which the body attempted to free itself from invasion.

There was the whole army of bacterial poisons, with their anti-bodies, and ophthalmic surgeons must know sufficient to be able to intelligently follow the reason involved in serum and vaccine therapy. If it was useful in their specialty, they must inquire when and how far, and how it should be employed. With regard to medicinal treatments, he hoped they would keep their armamentarium as small as possible without the sacrifice of efficiency. Too many drugs were a weariness of the flesh, both to him who gave and him who took. He thought the Society might well revert to more frequent committees and discussions, as in the earlier history of the Society. He referred to the large number of card-specimens now shown before the Society, many of them of great interest and importance, but members did not seem able to take full advantage of them, and their very number was the cause of that inability, for they could not see all, if indeed they could see any satisfactorily in half an hour in a crowded room. The institution of clinical evenings was quite an advance, but much still remained to he done. It would be well to have standing committees for men interested in special lines of work, whose duty it would be to report upon any case, when the member showing it approved. Of such committee the exhibitor would be a member for the time being.

Mr. J. B. Lawford read a paper entitled **A case of tumor of the optic nerve.** The patient was a female, æt. thirty-eight, single, who came under observation in June, 1906. The eyelids on the left side were puffy and slightly red; there was a moderate degree of proptosis, the displacement being almost directly forwards. The movements of the eyeball upwards and outwards were restricted, rotation downwards and inwards full. No œdema, and but slight vascularity of the conjunctiva. No tenderness on pressure; nothing abnormal in the orbit; no pain, but some discomfort. Vision was reduced to perception of light. The media were clear, the optic papillæ ill-defined and pale, and the retinal veins

tortuous. No hemorrhage nor disease of the choroid. The family history was good: the patient was a healthy, robust woman, and tuberculous and syphilitic disease could be reasonably excluded. There was no history of injury. Something amiss was noticed in the left eye four years previously, and in April of that year she consulted Mr. Wherry, of Cambridge, who recorded the vision on that date as follows: R. 6/6; L. 6/18, but with correction of hypertrophic astigmatism, 6/9 partly. The patient was seen by another ophthalmic surgeon during 1903–4, and was under treatment by drugs for some months, but there was no improvement in the symptoms. The diagnosis made in 1906 was: tumor of optic nerve sheath,—osteoma of orbit. Treatment by iodide of potassium was advised, and was carried out for some weeks, but without benefit. In July, 1907, there was a slight but noticeable alteration; the proptosis had increased, the movements of the globe were much restricted in all directions, the pupil was inactive to light, and there was no perception of light. The patient could not state how long the blindness had existed. No hemorrhages could be distinguished; the retinal veins were tortuous; there was no tenderness; no tumor could be felt, nor deep pulsation detected by the finger. The proptosis could not be reduced by pressure. There was no severe pain. The general health did not appear to be prejudiced by the orbital disease. Operation was advised. Three days later the patient was seen by Sir John Tweedy, who thought it was either osteoma of the orbital wall, or tumor of the optic nerve, probably the latter. In June, 1907, the eyeball and tumor were removed. The tumor extended from the back of the eyeball to the apex of the orbit, and the nerve was divided as close to the optic foramen as possible. There was extensive hemorrhage into the orbital tissue: the swelling gradually subsided, and she left the nursing ward a fortnight after the operation; 15 similar cases had also been recorded, which was in contrast to the number of cases of primary intradural tumor of the optic nerve, which numbered 102 up to 1901. The age of his own patient was above the average. The microscopical characters of the growth were described and demonstrated by Mr. George Coats.

SESSION OF THURSDAY, NOVEMBER 14, 1907. R. MARCUS GUNN, F.R.C.S., PRESIDENT, IN THE CHAIR.

Mr. J. HERBERT FISHER read a paper on **Some cases of interstitial keratitis from acquired syphilis**. Before reading notes of four cases which he had personally observed, he expressed his surprise that so few instances of interstitial keratitis from acquired syphilis had been brought before the Society: this was the more regrettable seeing that Mr. Jonathan Hutchinson, when vacating the presidential chair, had especially directed the attention of members to this subject as one upon which information might usefully be collected. The text-books dismissed the subject with very brief reference, and gave no authoritative statements as to frequency, date of onset, severity, and prognosis of the disease. After reading notes of his four cases, and alluding to one of corneal inflammation which rapidly followed the primary inoculation of syphilis on the lower eyelid, Mr. Fisher expressed his opinion that interstitial keratitis from acquired syphilis was generally a tertiary manifestation; that it appeared usually to attack only one eye, and that the infiltration frequently limited itself to a portion only of the cornea; that the keratitis, as far as it went, was identical in clinical appearances with that due to inherited disease, and that the statement which had been made by Nuel, that it was usually secondary to irido-choroiditis, was by no means universally accurate. Mr. Fisher further read notes of a case of interstitial keratitis in the child of a mother who had herself inherited syphilis, and who in consequence suffered from kerato-iritis, with choroiditis and deafness. The question of the transmission of syphilis to the third generation was raised upon this case: assuming the husband of a woman, who had inherited syphilis, to have acquired syphilis, the point was raised whether she was more, or less, likely than a wife free from inherited taint, to bear syphilitic children to him. Other practical points of discussion were raised, and members were invited to contribute their experiences, in hope that evidence might in time be obtained which would be of guidance both to ophthalmic and general surgeons, in answering the questions which might be addressed to them

as to the advisability of marriage by patients who were the subjects either of inherited or of acquired syphilis.

Mr. Thomas Henderson (Nottingham) read a paper on the **Anatomy of the so-called ligamentum pectinatum iridis, and its bearing on the physiology and pathology of the eye.** He stated that the so-called pectinate ligament was a part of, and belonged to, the sclera. The principle on which it was constructed was perfectly simple, being exactly the same as that which obtained in the fibres of the neighboring tissue in which it lay, as an open network, composed of non-sclerosed interlacing fibres, which were in direct continuation with the circular and longitudinal bundles of the sclera surrounding the venous sinus of Schlemm's canal. The circular fibres were made out in tangential and transverse sections of the pectinate ligament, while the longitudinal fibres were seen in radial sections. The criterion of a true radial section was that it showed the anatomical connection and continuation, often suggested, but hitherto never yet demonstrated, of the hyaline layer of the ciliary body with the posterior limiting layer of the iris. Arising as a continuation of the innermost lamellæ of the cornea, the pectinate ligament could be divided into (1) a small outer or scleral portion, where fibres at the posterior end of Schlemm's canal became lost in those of the sclera, and (2) an inner larger or ciliary division, which could be still further subdivided into (*a*) a portion which pierced the scleral ring to give attachment to the meridional fibres of the ciliary muscle, (*b*) a part which passed internal to the scleral ring to terminate in the connective-tissue stroma of the circular portion of the ciliary muscle. None of the fibres of the ligament turned round into the root of the iris, as was described, but this appearance was the result of an oblique section, and emphasized again the importance of studying only true radial preparations. The iris root was attached to the circular bundles of the ligament at a point just posterior to the scleral ring, which attachment to the ligament was quite a different matter to fibres of the ligament being said to bend round into the iris, which they did not. He considered that the term ligamentum pectinatum iridis was thus not only altogether inappropriate, but also wrong and misleading, as in man it was neither a comb-like structure

nor was it a ligament to the iris. On this account, and because of its reteform or cribriform structure, and further on account of its being a ligament in the true sense of the word to the two portions of the ciliary muscle, the term "cribriform ligament of the ciliary muscle" was much more appropriate. This ligament showed a most marked histological difference in its structure and nature at different periods of life. In youth it was cellular, while as age progressed it became more and more fibrosed. It was this physiological sclerosis in excess that he considered was the fundamental *causa causans* of primary glaucoma, in the causation of which two factors must be separated—the one constant, the other accessory. The first and constant factor was sclerosis of the filtration network and a consequent diminished outlet. The second and variable agent was vaso-motor in nature, and it was this which determined the acute attack, in which there was superadded to the first an inflow out of proportion to the available and already reduced channels of exit from the eyeball. Viewed in this light, the whole phenomena of glaucoma, clinical and pathological, could be explained. A closer study of this sclerosis of this filtration network gave a clear view of the process of development and stages of formation of connective tissue, with definite histological proof that white and elastic tissue was not a direct conversion of the cell protoplasm, but was derived indirectly from alteration and transformation of a homogeneous substance which was itself the product of cellular activity. The alveoli of the filtration network were connected with the lymph spaces of the cornea and sclera, whose fixed corpuscles were brought into direct association with the endothelial cells of the anterior chamber. It was in consequence of this anatomical continuity that the cornea, by diffusion, received its nourishment from the aqueous. This fact would explain a great deal, and would have the utmost bearing on the pathology of corneal diseases.

REPORT OF THE THIRTY-FOURTH MEETING OF THE OPHTHALMOLOGICAL SOCIETY, AT HEIDELBERG, AUGUST 5–7, 1907.

Reported by Dr. K. WESSELY, Berlin.

Translated from the German Edition, Nos. 2 and 3, Vol. LVIII., of these Archives, by Dr. Percy Fridenberg, New York.

1. Elschnig (Prague)—**Physiological, atrophic, and glaucomatous excavation**—presented drawings of ten eyes to show the various types of physiological excavation. Simple atrophy never produces an excavation which reaches below the level of the choroid so as to be ophthalmoscopically visible, and the distance between base and margin of the excavation never increases, as the base never recedes and the margin tends to become lower, and so to approach the base, on account of atrophy in the superficial retinal layers about the nerve head. The extent of a pre-existing physiological excavation alone may increase, but it never becomes total or marginal. The absence of an atrophic excavation in simple degeneration of the optic nerve is due to the fact that the destruction of the nerve tissue is accompanied not by atrophy but rather by hypertrophy of the glia and connective-tissue fibres. Excavation in a nerve head which has no pre-existent physiological excavation can only be produced by complete atrophy of nervous and connective-tissue elements as well, Schnabel's glaucomatous atrophy. "Atrophic" excavations are glaucomatous excavations.

Discussion: Schmidt-Rimpler (Halle) objects that there are cases of undoubted atrophy with deep-lying vessels and characteristic hooking. In one such case, Graefe was almost led to perform iridectomy, and later on found histologically

an atrophy reaching far into the nerve. He himself has seen a case of atrophy secondary to neuritis in orbital cellulitis in which atypical glaucomatous excavation developed, although tension never rose above the normal. SCHREIBER (Heidelberg) notes that atrophy never causes an equal diminution of nerve tissue in the nerve head and in the retina, the loss of substance in the papilla, itself, being always more marked. STOCK (Freiburg) notes that complete atrophy of nervous and connective tissue is not always associated with a glaucomatous excavation. For instance, in eight eyes with high myopia he found lacunar atrophy which had not caused an excavation. This form of atrophy is due to mechanical tension and enlargement of the myopic globe, and the tearing of some fibres, and it is quite possible that a similar factor, pressure, in glaucoma may be responsible for tears at the margin of the disk. SCHIECK (Goettingen) reports a case of excavation reaching to the margin, in which histological examination showed that the connective tissue was not atrophic. ELSCHNIG maintains that the ophthalmoscopic picture of total excavation does not prove anything, as connective tissue has been shown to be present, and that the atrophy in glaucoma tends to progress backwards with rapidity. In 50 cases of myopia, he has never seen lacunar atrophy. It must be rare, and requires further explanation,

2. BEST (Dresden): **The relation of near work to myopia.** The refraction condition may be looked upon as an adaptation to permanent short-range vision. A certain adaptability of the eye to optical conditions is a biological postulate. Theories which associate intraocular pressure during growth with its increase in length, do not satisfy this postulate. The convergence theory, and that of growth under muscular pressure cannot be maintained. It has not been shown that convergence causes any greater pressure than lateral rotation. Gradual increase of pressure may cause distension of the anterior pole, or of the nerve, but never a dilatation and lengthening by growth of the posterior segment of the globe. Near work can only act through the medium of accommodation during which there is an even tension on the elastic fibres in the choroid, not only near the ciliary body but also at the posterior pole, producing a growth stimulus.

The growth of the eye depends on the choroid. The dilatation of the sclera is secondary to choroidal conditions, when not congenital. The changes in the choroid are localized at the posterior pole, as the structure is least resistent in this place. Predisposition to myopia is due to a preponderance of meridional over circular fibres in the ciliary muscle, and to insufficient resistance power in the elastic choroidal fibres which constitute a mechanism for distant accommodation. Constant full correction of myopia acts well, as it produces a normal activity of this accommodative mechanism and its elastic elements, as in emmetropia.

Discussion: Sattler (Leipzig) doubts the relationship of accommodation to myopia, and notes that it is not growth, but passive giving way and stretching which cause enlargement of the posterior pole and segment, and that the pressure of the external muscles as exerted in near work is a complicated and active factor. Pfalz (Duesseldorf) has observed that the tendency of myopia to progress is in inverse proportion to the breadth of accommodation in youth, so that the latter is of prognostic importance. This observation and the results of full correction speak against the theory of Best. Heine (Greifswald) attaches little importance to the elasticity of the walls of the globe as a factor in development of myopia. In experiments with a differential manometer introduced simultaneously into the vitreous and the suprachoroidal space, increase of vitreous tension was not communicated to the other space, and no change was registered. Elschnig (Prague) calls attention to the fact that anatomical changes are found in the anterior segment of the globe, also, in myopia, and that the "myopic" build of the ciliary muscle is not characteristic, as it is found, at times, in hypermetropia.

3. Roemer (Wuerzburg): **Completion of serum therapy of serpent ulcer.** The latest studies in agressins and opsonins have shown that it is necessary to take cultures of high virulence to produce anti-pneumococcus serum, and in each case of ulcer the specific virulence of the germ must be determined. Severity of clinical symptoms indicates a high degree of virulence in inoculation into animals. Variation of virulence makes it possible to determine what per cent. of pneumococcus infections never goes on to ulceration, and

what proportion, and within what limits of virulence, is amenable to serum therapy. Phagocytosis is not the main factor, as only debilitated individual germs are subject to it. Wright's opsonins are identical with the hæmolytic complement. The specific serum is not bacteriotropic but anti-infectious.

Discussion: GALLEMÆRTS (Brussels) has seen good effects from Roemer's serum when other methods failed. SCHWARZ (Leipzig) considers the possibility of an alteration in the degree of virulence during the course of the disease. AXENFELD (Freiburg) notes that Wright's "vaccine" method has no effect on pneumococci while it is efficacious against streptococci. Roemer's drawings show that there is a transition of pneumococci to the type of the streptococcus mucosus capsulatus. ROEMER confirms this observation.

4. ZUR NEDDEN (Bonn): **Bactericidal substances in conjunctival secretion.** Normal tears and conjunctival secretion are not bactericidal, but secretion from the diseased conjunctiva kills the typhoid bacillus and the diplococcus of Morax-Axenfeld. This agency does not depend on the nature of the exciting germ, being found in all forms of infection, but on the intensity of discharge, being most marked in acute cases with free secretion but even then, less active than the blood serum of the patient. The bactericidal quality is destroyed by heat and drying. The bactericidal content of the secretion is derived from the conjunctival tissue, and ultimately from the blood, so that the products of inflammation must have a bactericidal action. The action of astringents in catarrhal inflammations is to increase transudation of bactericidal secretion and thus to aid the tissues to destroy the agents of infection. The direct germicidal action is very slight, as the astringents only reach germs in the superficial epithelium or in the secretion.

5. A. LEBER (Berlin): **Clinical and experimental study of sero-diagnosis in diseases of the eye.** Experiments with anti-bodies showed that a positive reaction was obtained in all cases of undoubtedly specific origin, such as parenchymatous keratitis, iritis, neuritis, scleritis, tabetic eye affections, and those in progressive paralysis and cerebral lues, as well as in cases in which the history was obscure and the

diagnosis doubtful. In tuberculosis, definite results were obtained from the aqueous, and tuberculosis antigen could at times be found in tuberculous conjunctival tissue. Cutaneous inoculation with tuberculin after Pirquet gave positive quantitative results in tuberculous adults and in children with tuberculous eye disease, while only 75–80% of eczematous cases give the reaction.

Discussion: Dor, Sr. (Lyons), notes that, of late, Calmette has made use of the ophthalmo-reaction of tuberculin on a large scale without any ill effects. Zur Nedden (Bonn) asked whether the aqueous with which positive reactions were obtained did not come from irritated eyes. v. Hippel (Heidelberg) questioned whether the great technical difficulties and the delicacy of the reaction are not sufficient to nullify any practical application. Schwarz (Leipzig) asked whether there were any cases of parenchymatous keratitis with a combined reaction. Leber answered that he had stated that the local reaction may be doubtful or dangerous in case of already existing ocular disease. He has not used the aqueous of perfectly unirritated eyes. The reaction is a difficult one to obtain, the method requiring pains and patience, but its further application can only be urged. Combined reactions of tuberculosis and syphilis have not been observed.

6. Hertel (Jena): **The sensibility of the eye to light rays.** Photometric determination of the intensity of a light source is not sufficient, as the visible energy may not be identical with the total energy of a ray exerted on the percipient elements of the retina. The total is determined by Hertel by means of thermo-electric measurements, who found that an increase of temperature of 5–10° C. was required to produce an effect of light, and greater energy, to cause color sensation.

7. Bartels (Strasburg): **On fibrils and fibril-acid in the fibres of the optic nerve.** Understanding of the transmission of impulses and studies of degenerative processes in the optic nerve depend upon a knowledge of the finer structure of the so-called axis-cylinders, which in all probability contain the conducting substance. Little is known about the primitive fibrils of the optic nerve. They are difficult to demonstrate even in freshly removed tissue and exceedingly fine sections, (1–2 μ) by Bethe's method, and are present in the maculo-

papillary bundle also. Each cone at the macula is probably supplied by a number of fibrils, so that there is a possibility of extensive cerebral maintenance. In the periphery it is probable that one fibril corresponds to a number of percipient elements. After fixing in alcohol, the nerve-fibre layers of the retina, and optic nerve, to a point beyond where the medullation is lost, were colored with basic anilin dyes, while at other points of the nerve the stain was not taken by the optic nerve-fibrils at all, while neighboring fibres of the ciliary nerve were intensely stained. This selective, physiological reaction to the stain is not seen after dehydration with ether. In this reaction the optic nerve behaves differently from a peripheral nerve, and resembles the fibre bundles of the spinal cord to which it is anatomically and embryologically related. Like them, the optic-nerve fibres may be made to take up the stain by treating them with normal sulphuric acid, 1:2500. The reaction may be purely chemical, depending on Bethe's "fibrillic" acid, which is split off in alcohol, or there may be physical factors in the case.

8. Birch-Hirschfeld (Leipzig) — **Study of orbital osteomata** — reports a case of ethmoidal, and two of frontal sinus osteoma, in which radiograms confirmed the diagnosis, determined the location and extent of the growths, and greatly facilitated operative removal. The frontal sinus osteomata were operated by temporary resection of the anterior sinus wall, combined, in one case, with opening of the cranial cavity on account of the tumor springing from the posterior wall. Recovery. The patient with ethmoidal osteoma, a woman, died eighteen days after operation, of brain abscess due to post-operative infection from the nasal cavities (fissure of the lamina cribrosa in removal of the tumor, which reached to the sphenoid sinus?). The mortality of non-operated osteomata is decidedly higher. Statistics may be improved by early diagnosis, shortening of the operation, and care in avoiding injury to the base of the skull. The growth should be laid bare and removed at its spongy pedicle, avoiding the orbital portion. Complicating sinusitis must be carefully treated. The osteomata may start from periosteum or from the interior, as in normal bone growth.

9. Schieck (Goettingen) — **On albuminuric retinitis** — ex-

amined two cases clinically and histologically. Characteristic retinal changes and parenchymatous nephritis, terminating fatally in three weeks and three months, respectively, were noted, yet post-mortem examination failed to reveal any vascular changes. There was marked degeneration of the nervous elements of the retina, without any sclerosis of the central vessels. A few minute vessels in the immediate neighborhood of degenerated areas were found obliterated, but at other markedly diseased points even these changes were lacking, and the afferent vessels and capillaries were found intact. Disturbance of metabolism and resulting toxins certainly play a greater rôle in nephritis and the resulting retinal disease than has been generally recognized. This alone explains the possibility of recovery from albuminuric retinitis, which, if it were dependent on vessel changes alone, must produce lasting damage. Sclerotic changes are, it is true, present in many cases, and contribute, by rendering nutrition more difficult, to the toxic degeneration of the nervous elements. This explains the high percentage of retinitis in contracted, arteriosclerotic kidney.

Discussion: Bartels (Strasburg) asks whether degenerative changes, due to hypothetical toxines, are found in the retina alone, or also in the spinal cord. Krueckmann (Leipzig) notes that retinitis is less common in ordinary albuminuria of pregnancy than in chronic nephritis aggravated by gestation, in which cases blood pressure is always high. The latter factor is of great importance, and the action of toxins need not be postulated except where the presence of vascular disease and œdema is not sufficient to explain the conditions.

Uhthoff (Breslau) also lays stress on the deleterious action of œdema in causing retinal changes. The area lifted by œdema must be affected adversely in its nutrition. v. Michel (Berlin) notes that the vascular changes themselves depend on the action of toxins. Schmidt-Rimpler (Halle) cites the old view of Traube, that hypertrophy of the left ventricle is the indirect cause of the retinal disease.

Schieck adds that he was unable to find any morbid changes in the central nervous system, and that of late pathologists have confirmed his observation that vascular changes

may be absent in marked cases of arteriosclerotic kidney.

10. KRAUSS (Marburg): **The orbital veins of man.** Forty orbits were studied by means of injections and radiography to gain exact data as to the efferent blood channels. The main branches are the superior and inferior ophthalmic, and the lachrymal veins, which anastomose freely, forming a more or less completely closed ring around the globe, and receive the blood from the vorticose veins, thus securing a free and complete off-flow of blood from the eye. They may also drain the central retinal veins which, however, generally empty into the cavernous sinus directly. This circle of veins empties into a number of large branches leading to the facial vein. In rare cases, which may be important pathologically, there is a venous connection through the inferior orbital fissure, with the pterygo-palatine fossa. The superior ophthalmic vein may anastomose with veins of the dura and pia mater. None of the orbital veins has valves, so that the blood current may take place in any direction, the anterior channels being larger. When the head is inclined forward, the off-flow is through the facial vein.

Discussion: SATTLER (Leipzig) asks whether variations were found in the dimensions of the orbital veins; the inferior vein being found of larger calibre than the superior, and so on. KRAUSS answers that there are occasional variations, but that the conditions are quite uniform.

11. GREEFF and CLAUSEN (Berlin): **Diplo-bodies in trachoma cells.** In many cases the secretion and the contents of follicles contained minute dot-shaped diplococci or diplobacilli, which could be seen only with high powers (Zeiss, Apochr. *2mm*, Oc. 8.) magnifying 2000 D. They could be stained with dilute carbol-fuchsin, methyl blue, and Bismarck brown, but not with Gram's stain. Two inoculation experiments on human beings are reported.

Discussion: AXENFELD (Freiburg) has seen these granules in ordinary catarrhal conjunctivitis. Prowazek thought they were the specific germs for the acute exanthemata. Careful control experiments are absolutely necessary. The diplobodies can be filtered, while the trachoma virus of Kuhnt and Pfeiffer can not. Inoculations with the contents of follicles have been reported before, by Addario.

Roemer (Wuerzburg) has also found the diplo-bodies in follicular catarrh.

Herzog (Berlin) has seen the granules in skin affections caused by demodex (comedo) and believes that they are products of hyaline degeneration.

Greeff lays stress on the results of staining and his confirmation of the findings of Halberstaedter and Prowazek, but is inclined to be guarded in his interpretations, for the present.

12. Hummelsheim (Bonn)—**Tendon transplantation of ocular muscles**—experimented on apes' eyes, removing a lateral rotator, then splitting the superior and inferior rectus and attaching the approximated halves behind the insertion of the extirpated muscle. Results, as demonstrated by photographs, were excellent, even within a few weeks. In the case of a girl of twelve with absence of abduction, right, probably congenital, and certainly dating from the age of two, this procedure was used, and abduction of 30° obtained within five weeks. Patient was presented. The function of superior and inferior rectus has not suffered. Treatment with exercise, electricity, and massage, is still being kept up. In the operation the muscles are split longitudinally and transversely and transplanted together with the overlying capsule.

Discussion: V. Pflugk (Dresden) reported a case of injury with a pitchfork in which the inferior rectus was torn through, and the missing tendon successfully replaced by a silk thread.

Schwarz (Leipzig) asks whether there is an actual division of innervation, or whether the effect is produced by concomitance of the split muscle.

Stood (Barmen) has also successfully transplanted the superior recti in a case of absence of both internal and inferior recti. A previously existing relative ptosis was also cured.

Axenfeld (Freiburg) notes that muscle transplantations had been done by Bourgeois. Hummelsheim believes that there is an actual division of innervation, as there is good convergence after the internus has been replaced by another muscle.

13. Gullstrand (Upsala)—**The question of the macula**—

demonstrates specimens to disprove the views of Dimmer as to a presumptive macula lutea in the human retina.

Dimmer (Graz) has repeated his experiments, reported previously, under the conditions demanded by Gullstrand to avoid errors of observation, and repeats his conviction of the existence of an actual macula lutea, as the yellow color can be distinctly seen.

Gullstrand can not confirm this statement by his own observations and is sure that the yellow spot seen by Dimmer is, at all events, not the normal centre of the retina.

14. Abelsdorff and Wessely (Berlin): **Demonstrations on the comparative physiology of intraocular osmosis.** Various experiments were made on the eyes of mammals, and on birds, reptiles, amphibia, and fishes: 1. Their production of intraocular fluids and their chemical reaction under normal and pathological conditions. 2. Phenomena observed with fluorescin. 3. Anatomic-histological changes after paracentesis of cornea or sclera as compared with normal eyes. 4. Results of extirpation of various structures concerned in the production of the intraocular fluids. In lower animals the choroid takes a much more active part in the circulation of fluids than in mammals, and intense hyperæmia is noted after paracentesis of the anterior chamber. The vascular iris of birds, on the contrary, is by no means indispensable, and can be entirely removed, in doves and fowls without apparently affecting the eyes or interfering with the production of aqueous. Birds operated on in this way were demonstrated. The pecten of birds as shown by histological investigation and by the results of extirpation does not seem to be of great importance for the nutrition or the integrity of the eye. In amphibia, reptiles, and birds, particularly the last, the reproduction of intraocular fluids appears to be much more rapid than in mammals, while fishes show an exceedingly slow regeneration.

15. Stock (Freiburg): (*a*) **Optic-nerve changes in myopia.** Of eight highly myopic eyes (15–34 D) examined histologically, two showed decided lacunar atrophy (Axenfeld–Polatti) of the nerve. In two other cases similar changes were found in an incipient stage at the temporal side of the disk, so that they are certainly not as uncommon as Elschnig claims. The

localization at the temporal side in these cases and one of Polatti's seems to show that mechanical traction on the globe is a factor in the production of lacunar atrophy. The fibres are torn by traction from in front, by the retina; retract by virtue of their elasticity, and thus produce the picture of holes in the lamina cribrosa, which, it is to be noted, are only seen in high myopia and in glaucoma. In the latter disease mechanical pressure on the lamina acts in the same way, tearing the fibres which are stretched over the edge of the scleral ring.

(*b*) **Ocular changes due to experiments with trypanosomes.** Stargardt, Morax, and Stock have shown that in general infection with trypanosomes parenchymatous keratitis may develop. In all cases thus far reported there was an accompanying inflammation of the uveal tract, and it was impossible to decide whether this or the corneal affection was the primary disease. Stock demonstrated the cornea of a rabbit in which parenchymatous keratitis developed two months after infection with trypanosoma Brucei. The eye is otherwise normal, but the cornea presents a dense infiltration, degeneration of nuclei, and new formation of blood-vessels. Trypanosomes are seen in large numbers between the corneal lamellæ. This proves that the parasites in question are able to penetrate the intact non-vascular cornea and cause inflammatory changes. For specific interstitial keratitis we may infer that the spirochæta, too, may penetrate into intact corneal tissue so that a primary keratitis may be due to direct infection and not necessarily to toxins.

(*c*) **Experimental changes in rabbits' eyes after blood-infection with pathogenic yeasts (saccharomyces).** Yeast infections in human beings have been seen by Busse (general infection), Tuerck (meningitis), and Gilchrist and others (blastomycosis cutis). Yeast cells have been found in the conjunctiva in trachoma, spring catarrh, and cause local inflammation when introduced experimentally (yeast-conjunctivitis).

Stock infected the general circulation with pathogenic yeasts and produced blastomycosis cutis, follicular conjunctivitis, chalazion-like growths, iritis, cyclitis, choroiditis, and retinitis

The microscopic sections presented a picture very closely resembling tuberculosis. It is possible that some obscure cases of chronic uveitis may be due to yeast infection of this sort.

16. Uhthoff (Breslau)—**Large syphilitic ulcer of cornea and sclera with chronic course. Enucleation**—demonstrated histological specimens of this extremely rare condition. Almost the whole anterior half of the globe was affected by an ulceration which steadily advanced and finally led to an extensive perforation beyond the limbus. The disease lasted a whole year and at last necessitated enucleation. The deep ulceration presented thickened margins with copious new-formation of blood-vessels. Cornea and sclera were almost completely destroyed, and the choroid also affected.

17. Wagenmann (Jena): **Demonstration of microscopic specimens.** (*a*) Epithelial implantation behind the iris with beginning cyst-formation, after penetrating wound of the sclera. (*b*) Penetrating wound of the globe caused by the explosion of a signal cap or bomb with cinnabar-red masses in the vitreous and circumscribed foreign-body reaction. (*c*) Bilateral true ptosis adiposa in a young patient.

Discussion: Wintersteiner (Vienna) reports having seen the development of small iris cysts due to epithelial implantation in the course of penetrating injuries.

18. Greeff (Berlin): **The healing of blind Longinus in myth and picture.** Longinus was the Roman soldier who plunged a spear into the side of the crucified Christ to see whether he was still living. Legend reports that he washed his eyes with the blood and that his eyes were opened at once, upon which he embraced Christianity. Up to the 10th century the blindness was represented as actual, not as spiritual. In altar pictures and reliefs Longinus is invariably represented as variously blind or cured of physical blindness.

19. Franke (Hamburg): **Demonstration of tumor of iris, tumor of conjunctiva, and streptothrix of canaliculus.** In the last case, cultures were negative but the microscopical picture was unmistakable. The conjunctival tumor was of an inflammatory character, and protruded like a cock's comb from the conjunctiva of the lid, resembling a broad condyloma, but there was no evidence of specific disease. The iris tumor,

about the size of a split pea, was removed by iridectomy. It was a perithelioma with central vacuolization, and probably benign, as no recurrence had been noted, in spite of the size of the growth, up to a year after removal. Similar new growths must have been removed under the mistaken diagnosis of sarcoma in more than one case. Where there is any doubt at all, iridectomy should be performed and the tissue examined microscopically.

Discussion: GUTMANN (Berlin) reports the disappearance of a similar growth under treatment with mercury, after the diagnosis of sarcoma had been made.

20. CLAUSEN (Berlin)—**Demonstration of syphilis in rabbits**—showed transmission of experimental interstitial keratitis through 12–13 generations. Latency varied from 32 to 50 days. In all positive inoculations there was more or less severe iritis. Aqueous of human beings affected with specific iritis and interstitial keratitis was injected between the corneal lamellæ and into the anterior chamber of rabbits. The former invariably produced deep fascicular keratitis, with pannus, developing after 10–14 days and extending to the middle of the cornea, and gradually resolving after 3–4 weeks. The inoculations of the anterior chamber were all negative.

21. GILBERT (Munich): **Microscopic specimens of degenerative pannus.** In an absolutely glaucomatous eye which had shown repeated eruptions of vesicles, a new-formed tissue layer was found extending throughout the entire cornea between the epithelium and Bowman's membrane, becoming perfectly homogeneous and structureless toward the middle. The characteristic changes of keratitis bullosa were found at the site of the eruptions but these were much less pronounced than the subepithelial pannus which was most marked where there was no epithelial degeneration, and lacking where the epithelium was affected. This degenerative pannus is a secondary process in keratitis bullosa, and represents an anatomic process of healing. Delicate intra-epithelial fibres were also observed, probably degenerated connective tissue, many of them homogeneous and structureless, growing out of the newly formed subepithelial layer, and surrounded by old or regenerated epithelium.

22. Roemer (Wuerzburg)—**Immunization processes in the anterior chamber**—was not able to confirm the observation of Leber and Wessely of an increased production of agglutinins in the anterior chamber within half an hour after subconjunctival injections of normal saline solution. Nor is there a production of agglutinins within one quarter of an hour in the intact chamber after subcutaneous injection of agglutinating horse-serum. The resorption of the serum itself requires twenty hours, and the heterogeneous agglutinins in the concentrations used by Leber do not enter the intact anterior chamber at all. In cholera-immunity of the lens there is no increase of agglutinins, as there are no receptors of the second class for cholera or typhoid in the lens, so that the antigens do not reach it and could not pass the lens capsule if they did.

Discussion: Wessely (Berlin) reports that he always made comparative tests by injecting an equal quantity of physiological salt solution into the control eye, and had never seen increase of albumin or entrance of hæmolysins into the aqueous, which is only observed after the use of hypertonic solutions.

23. Ulbrich (Prague)—**Circulation of intraocular fluids**—observed a case, the first of its kind on record, of congenital partial coloboma of the iris closed by a movable membrane, allowing direct inspection of differences of tension in the anterior and posterior chamber without any mechanical operative interference. Pressure on the cornea causes recession, pressure on the equator or removal of the corneal pressure causes protrusion, of the membrane. Spontaneous movements of an irregular sort are also seen which are not dependent on motions of the globe, pupillary changes, or accommodation. After winking or closure of the lids, the membrane is frequently found indrawn, as also on accommodation. On relaxation of the ciliary muscle or after continued spasm there is protrusion of the membrane. These oscillations prove the existence of differences of intraocular pressures. Their irregularity can only be explained by the presence of a physiological pupillary occlusion. The spontaneous protrusion in accommodative effort shows that aqueous is produced in the posterior chamber. Winking seems to do away with the physiological occlusion, allowing the

aqueous to enter the anterior chamber. The accommodative movements are in accord with Helmholtz's theory.

Discussion: HEINE (Greifswald) considers this case not entirely convincing, as the conditions were pathological rather than physiological and capillary adhesions of the delicate membrane to the lens may have caused the phenomena observed. ULBRICH objects that only differences of intraocular tension between the anterior and posterior chamber could have caused the movements of the membrane.

24. AXENFELD (Freiburg): **Operative miscellany.** (*a*) **Sclerocorneal couching (scleronyxis anterior) with preliminary iridectomy.** The procedure is indicated when an eye has been lost by pernicious hemorrhage or fluid vitreous after extraction, and the appearance of the second eye suggests the danger of similar complications, or where there is great probability of post-operative infection from external circumstances such as extreme senility, or insanity. A small iridectomy, if possible in narcosis, will generally be well borne by the eye. The anterior chamber is punctured at the limbus, as in subconjunctival discission. The needle is then passed into the coloboma, against the upper margin of the lens which is pushed directly downward until it passes the lower edge of the pupil. The upper margin generally inclines backward somewhat. Even if the lens does not entirely disappear or rises up into the pupillary area, the optical result is generally good as the coloboma remains free. The operator sees every step of the procedure, there is less injury to the vitreous than in posterior scleronyxis, and correspondingly less danger of detachment and glaucoma, and the iridectomy is a preventive of a number of late complications. Two cases were successfully operated.

Discussion: SATTLER (Leipzig) has performed the old couching operation with success in one case. It is not dangerous when performed with a correctly curved needle which will not engage in the lens. The only indication is absolute refusal of extraction after loss of the other eye, as pernicious hemorrhage is frequently unilateral, and in case of fluid vitreous spoon-extraction in the capsule after preliminary iridectomy is at least as free from danger. KUHNT (Bonn) considers iridocyclitis due to traction on the zonule as the

chief danger in reclination. Before couching he makes a ring-shaped incision through the entire zonule. SCHWARZ (Leipzig) advises iridectomy and zonulotomy downwards, dislocating the lens upwards and so allowing the area of the coloboma to be sufficiently freed.

(*b*) **Extirpation of the tarsus in blepharitis-ectropion.** In this form of ectropion the mucous membrane is drawn around the edge of the tarsus, and the latter may be greatly thickened and deformed. After loosening the skin layer the tarsus may be removed by dissecting it off from the conjunctiva, removing that part of the membrane which adheres to the tarsal margin. A triangular piece of conjunctiva may be excised. The skin of the lid must be undermined well down on the cheek, as its elasticity is generally much reduced. The lid margin is restored and blepharitis improved or cured.

Discussion: LANDOLT (Paris) describes a method used by him for twenty years. The lid is turned in between the fingers and a piece exsected. Snellen sutures are then passed. The immediate result is a marked entropion, with good position after removal of the sutures. MAYWEG (Hagen) shows photographs of cases in which the lid is turned in, the skin cut off horizontally along the most prominent portion, and the defect covered by transplanted flaps. KUHNT (Bonn) advises invariable removal of the lashes on account of the irritative action of the long lanugo-like wool-hairs. Tarsal extirpation and plastic operation are required according to the severity of the individual case. STRAUB (Amsterdam) recommends Lagleyze's new operation without extirpation, by means of two sliding rhomboidal flaps which shorten, raise, and replace the lower lid. AXENFELD refers to the admitted dangers of the old method of couching and to the fact that there are cases of loss of an eye from pernicious hemorrhage in which we do not dare to attack the second. Schwarz's suggestion is not practical, as the lens cannot be sufficiently dislocated upward.

25. UHTHOFF (Breslau)—**Developmental anomalies in temporal hemianopsia, or affections of the hypophysis**—refers to his reports since 1897 on visual disturbances in dwarf-growth and giant-growth. Marked adiposity progressing and de-

veloping uniformly with the loss of sight was noted in two or three new cases, associated, in one, with gigantism, and in the other with dwarfing. On autopsy of one case an adenoma of the hypophysis, larger than an egg, was found. The crossed fibres were completely destroyed and the chiasm severed by pressure. The patients were all young. In one case the ocular disturbance became stationary. Infantile genitals were found in all three cases, but this could not be held responsible for the abnormal development of fat, as after castration, for the reason that the adiposity dated from early childhood when no sexual development can have been present. Visual disturbances in cretinism and myxœdema are exceedingly rare. Uhthoff demonstrated a large cystadenoma of the hypophysis which had caused marked displacement and degeneration of the basal portions of the brain. This case was watched for seven years, and for a long time there were only slight cerebral symptoms, and, especially, no paralyses, although in spite of the slowness of growth of the tumor, there was marked loss of sight, which later improved and then remained stationary.

Discussion: Nieden (Bonn) reports a case of temporal hemianopsia, uncomplicated for a long time, by other symptoms. Finally the development of pathological adiposity suggested the diagnosis of tumor of the hypophysis. Franke (Hamburg) reports a similar case in which trophic disturbances did not develop until long after bilateral amaurosis had set in, and atrophy of the genitals took place at a very late stage. Bartels (Strasburg) calls attention to the frequent proliferation of these tumors into the naso-pharynx. Frequent sneezing may be an early symptom. The changes in the genitals are not secondary but coincident or coordinate, and the adiposity does not depend exclusively on disease of the hypophysis, but on disturbances in the neighborhood. A case has been successfully operated by Schloffer. Clausen (Berlin) reports two cases in which the diagnosis was made on the strength of radiograms. V. Hippel (Heidelberg) saw a case of hypophysis tumor in which the patient continued to give milk five years after her confinement. Bernheimer (Innsbruck) considers the chances for successful operative intervention as exceedingly slight. Schlof-

fer's patient died two months after operation, which is always a most serious measure. Radiograms do not give any clear indication of the size or operability of the tumor. A case of infantilism with tumor of the hypophysis was reported, and PINKUS (Cologne) spoke of a case of gigantism in which the headache was relieved by thyroid-extract. UHTHOFF laid stress on the present lack of definite knowledge as to the physiology of the hypophysis. Increased or, again, diminished secretion may cause trophic disturbances. The operation is extremely dangerous and internal treatment often very successful.

26. BERNHEIMER (Innsbruck)—**Studies on the commissure of Gudden**—reports investigations on white rats with bilateral congenital anophthalmia. In the cystic formations in the orbit there was no differentiation of the retina, and accordingly the entire visual tract had failed to develop. Such brains are particularly suitable for a study of the inferior commissure, which is, as it were, isolated by nature. Weigert sections of the septa showed that the main mass of the fibres spread out in a fan shape into the internal geniculate body. A smaller mass separating enters the reticular layer of the thalamus. Only a few fibres can reach the corpora quadrigemina in either way, while the internal geniculate bodies of the opposite sides were connected. As the latter has relations with the cochlear nerve, it is probable that Gudden's is an acoustic commissure, which has merely spatial relations to the chiasm.

27. TRENDELENBURG and BUMKE (Freiburg): **Bach's hypothetical pupillary centres in the medulla.** Experiments on cats show that double section of the medulla at the spinal end of the fossa rhomboidea immediately produces reflex (light) paralysis of both pupils. Unilateral section affects only the pupil of the opposite side, while exposure of the fossa alone is often followed by paralysis with meiosis (Argyll-Robertson pupil). Bach explains these phenomena by the hypothesis of inhibitory centres at the spinal end of the fossa. In 6 cases total section, and in 4, partial section was made under artificial respiration at the typical point, and the animal allowed to live for three weeks. The completeness of section was verified by microscopic examination. In no case were

the observations of Bach confirmed. Light paralysis was never observed, but immediately after section there was invariably dilatation and then an even exaggerated reaction to light. Meiosis was never seen on exposure of the medulla, but was noted in conjunction with pupillary paralysis as an occasional after-effect of ether narcosis without any operative procedure. In the surviving animals after partial section of the cord medulla a slight inequality of the pupils was noted which cannot as yet be explained.

Discussion: Bartels (Strasburg) has produced lesions of this region in sharks and noted inhibition of general movements. Inhibitory centres would explain the discrepancy between the observations reported and those of Bach. Bach (Marburg) reports that he has confirmed his observations by experiments without narcosis. Bernheimer (Innsbruck) states his belief that the narcosis is a source of errors of observation. Trendelenburg and Bumke object to generalized application of results of experiments on lower animals. Levinson, for instance, made a mistake, in using rabbits.

28. Wehrli (Frauenfeld)—**New histological and clinical studies on the etiology of keratitis nodosa** (Groenouw)—made sections of bits of corneal tissue from the eyes of two brothers affected with this chronic progressive form of keratitis and found uniformly evidence of superficial foci of inflammation, with swelling and proliferation of the corneal cells and lamellæ, particularly of Bowman's membrane. The development of epithelioid cell-groups and of a peculiar necrosis, finely granular detritus with remnants of degenerated nuclei and lamellæ, suggesting cheesy degeneration, showed that the inflammation was of an unusual nature. There were no giant cells, tubercle bacilli, or foreign bodies, and inoculations were negative. The position of the nodules between Bowman's membrane and the epithelium or between the latter and the lamellæ excludes simple degeneration with following regeneration. The cases were characterized clinically by general, and some local, reaction to injections of new tuberculin (TR) in small quantities. Physical examination and the X-ray showed marked changes at the apex of one lung and enlarged and infiltrated mediastinal glands. The ocular

affection may be considered a local manifestation of a general juvenile tuberculous infection which is still partly latent.

Discussion: Fleischer (Tuebingen) has been unable to find any connection of this affection with tuberculosis, and nothing positive in this respect has been shown by Werhli. Lues is not a factor, but in-breeding, consanguinity, may be. The presence of a general tuberculosis proves nothing. The local histological finding was not that of tuberculosis, as no bacilli were found, inoculation was negative, while the early development, the whole course of the disease, and the absence of iritis were quite unusual. Schieck (Goettingen) notes that the absence of leucocytes in the inflammatory foci does not of itself speak against the tuberculous character of the process as he has been able, with experimental inoculation of the cornea with attenuated tubercle bacilli, to get foci of pure epithelioid cells. Elschnig (Prague) claims that Wehrli's specimens merely show a simple degenerative process like that seen in pannus, but no tuberculosis. Wehrli, in conclusion, considers it of importance to bear in mind the presence in these cases of general tuberculosis. This fact is certainly significant

29. Harms (Tuebingen)—**Connective-tissue formation in the retina**—divides the cases reported into two main groups, those with, and those without hemorrhages at some stage of the disease. Most of the latter type prove nothing as to the picture of Manz's proliferating retinitis developing without previous hemorrhages in the interior of the eye, as they were examined very late in the disease as a rule. Dahrenstedt and Fehr, alone, report two convincing cases in which only a few days after sudden deterioration of vision acute exudative neuroretinitis with thrombosis of a branch of the central artery was found. Harms reports a third similar case which he examined histologically. The patient, a man of twenty-five, with general arteriosclerosis had a sudden and marked loss of vision which improved spontaneously but after two and one-half weeks again failed. Ophthalmoscopic examination now showed optic neuritis without hemorrhages and with grayish-blue exudation below the disk. Later on, connective tissue strands developed along the course of the larger vessels and glaucoma resulted, necessitating enucleation. His-

tological examination revealed connective-tissue proliferation in front of the internal limiting membrane spreading forward like a fan and exerting traction on the retina which was partially detached. There were marked changes in the retinal vessels and thrombosis of the main branch of the central vein but only very small hemorrhages. The last condition was noted in similar cases which had been kept under clinical observation. Retinitis proliferans is probably invariably due to vascular disease of the retina and consequent disturbances of circulation, but the extravasation is not necessarily of hemorrhagic origin.

30. FREYTAG (Munich) — **Natural basis for a nomenclature of the meridians of the globe** — maintains that topographic-anatomical considerations and criteria depending on the natural relations of the organ of vision should determine the starting point and direction of the meridians. The zero point must logically be on the horizontal meridian, and advance symmetrically in both eyes from the nasal to the temporal side. The vertical meridian is numbered 90° at its upper end, the horizontal meridian, 180° at its temporal end. To avoid numbers above 180, the lower ends of the meridians on visual field blanks are numbered like the upper with the addition of a "u" (unten).

31. AXENFELD (Freiburg): **Demonstrations with the projection apparatus.** (*a*) **Glioma Iridis.** Clinical and histological illustrations and specimens of the case of a little girl of two. Extensive yellowish-red tumor masses developed in the iris while the fundus oculi remained free. The diagnosis lay between tubercle and glioma, but the structure of the latter growth was evident on histological examination. The retina showed merely marked atrophy. There was a high degree of chalky degeneration of the membrana limitans interna, of the vitreous, and of a spongy mass in the pupil. In this extremely rare instance the glioma had originated in the pars iridica and ciliaris retinæ.

(*b*) **Metastatic carcinoma of the orbit and ocular muscles.** After extirpation of a mammary cancer diplopia developed on the corresponding side and was for a long time attributed to a nuclear paralysis but was actually due to metastases in the external ocular muscles. The globe finally appeared

immovably imbedded in masses of new-growth although proptosis was not marked. As no metastases had developed elsewhere in the course of three years, Axenfeld exenterated the orbit, removing the entire lower and nasal wall, and closing the large cavity by plastic operation (Kuester). The large opening into the nose gradually became smaller. No relapse was noted up to three months after operation.

(*c*) **Accessory ciliary ganglia.** These formations were found directly behind the globe and in the sclera, as in earlier communications of this author. Ganglion cells have also been found in the ciliary nerves of rabbits (Peschel) and near the ciliary ganglion.

Discussion: WINTERSTEINER (Vienna) has seen a metastasis into the external rectus in a case of spindle-cell sarcoma of the gut.

32—SCHREIBER (Heidelberg)—**Medullated nerve fibres in dogs**—describes the fundus of a dog in which both disks appeared of a glistening white. The diagnosis of opaque nerve fibres was verified by histological examination. The medullary sheaths of all the fibres were continued through the lamina cribrosa as far as the edge of the disk, and surprisingly enough this condition was found microscopically in the eyes of twelve other normal animals where there was no ophthalmoscopic evidence of abnormality, but here the number of opaque fibres within the sclero-choroidal canal was smaller. The lamina was well developed in all. This disproves the hypothesis that the normal lamina presents a mechanical obstacle to the development of medullary sheaths.

33. REIS (Bonn): **Demonstration of microscopic specimens.** (*a*) **Faulty localization of a choroidal sarcoma.** Case of a man of sixty-five. Fundus reflex almost completely abolished except below and behind the equator of the slightly cloudy lens where a solid reddish-brown mass appeared and was taken for a sarcoma of the ciliary body. On enucleation the mass proved to be a large, partially encapsulated blood-clot, but at the posterior pole where no growth had been suspected a choroidal sarcoma was found which could not have been detected. The growth had penetrated the retina instead of causing the usual detachment, and protruded free into the vitreous at a number of points, allowing tumor cells

to reach the bottom of the vitreous and proliferate on the inner surface of the retina. The large hemorrhage, mistaken for sarcoma, was probably due to arrosion of a retinal vessel by tumor cells proliferating in this way or after transportation through blood-vessels.

(*b*) **Keratitis profunda.** Case of a healthy girl of eighteen. Enucleation of left eye for uncontrollable and severely painful inflammation suggesting uveitis. The slightly flattened cornea presented an extensive central parenchymatous exudate. Histological examination failed to reveal any marked uveal involvement, but the cornea showed advanced primary changes in the deeper layers, particularly at the centre, of the nature of an infectious granuloma, *i. e.*, nodular foci of granulation tissue, with central necrosis and scattered giant cells, and a tendency to cicatrization. No tubercle bacili were found but the process was probably a primary tuberculosis independent of any changes in the uveal tract, sclera, or iris angle.

34. SEEFELDER (Leipzig)—**Microscopic specimens of embryonic eyes**—showed sections from the seventh week, at which stage the mesoderm of the anterior segment of the globe is still undifferentiated, the lens vesicle still hollow except for a few fibres at the back, and a tunica vasculosa lentis present. The fœtal cleft is closed only at its middle third. Optic nerve stalk still hollow with ventral groove partly enclosing the hyaloid artery. No trace of lids. At nine weeks there is marked differentiation of the mesoderm. The optic nerve groove is closed, nerve-fibre formation advanced. Lid rudiments appear. Descemet's membrane first appears as a delicate cuticle in the fourth month. At eight months the sclero-corneal reticulum contains many elastic fibres, and the ligamentum pectinatum shows a connective tissue as well as a cellular groundwork.

35. IGERSHEIMER (Heidelberg)—**Pathological histology of diphtheritic conjunctivitis**—reports two cases. The first was seen in its incipiency, with hyperæmia but intact epithelium in the fornix fold and a superficial necrosis of the palpebral conjunctiva. In the second, there was advanced necrosis and extensive fibrinous exudate. The vessels at the margin of the necrotic zone were completely filled with red cells in a state of granular decay, and this "blood-cell thrombosis"

probably accounts for the anæmia and consequent necrosis which, as bacteriological examination showed, is probably due to secondary infection.

36. Zade (Leipzig)—**Fructification organs of aspergillus fumigatus in sections of rabbit's cornea**—demonstrated experimental keratomycosis with sporangia in the ulcer. The rarity of this find is due to the fact that these organs of aspergillus only develop in the air, which is kept away from the cornea by constant moistening with lachrymal fluid, In this case a corneal sequestrum had formed making a hole in which there was enough air for growth.

37. Hanke (Vienna)—**Specimens of optic neuritis in tetany**—found changes like those of diabetes in the retinal pigment layer of the iris. There were degeneration and proliferation of the epithelium with partial detachment and cyst formation within the layer. There were typical cortical opacity with peculiar guttate degeneration of the nucleus, somewhat resembling zonular cataract, but no cleft formations (Peters). The third rare complication of tetany was the neuritis, in a regressive stage with partial atrophy. Signs of stasis are still present, the intervaginal spaces being markedly dilated. The intraocular changes of tetany and diabetes are rather similar and both may depend on disease of so-called hæmopoietic glands.

38. Hallauer (Basle)—**Choice of glass for spectacles**—tested the absorption of light by various kinds of glass by photographic exposures of velox paper. In daylight, crown and flint glass, and rock crystal are so transparent that the outlines of the glass hardly appear on the developed print, while even smoked and blue glasses transmit a great deal of light. Red and green glass are comparatively opaque. Violet and blue rays easily pass through smoked and blue glasses, which are not adapted to protect against intense light. Fieuzal's yellow, yellow-gray, and green-gray glasses absorb most light.

39. Laeber (Berlin)—**The trachoma question**—inoculated the conjunctiva of apes and human beings with trachoma, and was able to find peculiar, small bodies, generally intracellular, and of an oval or round shape, with occasional constrictions, and peculiar grouping.

40. Happe (Giessen) — **Ring abscess of the cornea** — reports two cases following perforating injury, and one after ulcus serpens. In the last case there was no intraocular infection, although bacillus pyocyaneus was found, the other two were lost by panophthalmitis due, respectively, to bacillus subtilis and to staphylococcus albus. Inoculations of the vitreous with any of these germs produced panophthalmitis with typical marginal pus-infiltration of the cornea, but inoculations of epithelial defects of the cornea were negative or nearly so, except in the case of pyocyaneus which invariably caused ring-abscess, and ulcer with hypopyon. In vitreous infections there is necrosis of the deep layers near the entire posterior surface of the cornea, and the ring-infiltration is at the extreme periphery, while in direct inoculation the cornea shows only circumscribed necrosis and the pus-infiltration is more central as in metastatic panophthalmitis. Combined inoculation of germs may follow penetrating injury.

Discussion: Hanke (Vienna) grew cultures of proteus vulgaris from a corneal ulcer and was able to produce a ring-abscess by inoculation.

41. Schieck (Goettingen) — **Sympathetic chorio-retinitis** — reports a case following perforating corneal ulcer in which the inflammation of the anterior uveal tract subsided so rapidly that it was possible to follow the course of the fundus changes ophthalmoscopically. There were redness and blurring of the margin of the disk, with striate opacities running out in the retina; then an extensive milky opacity, and finally the picture of a residual chorio-retinitis with wrinkling. Vision was at first $\frac{20}{50}$, sinking during the stage of retinal opacity to fingers at two metres, and finally rising to $\frac{20}{50}$ again.

42. Krusius (Marburg) — **Demonstration of apparatus** — showed (*a*) a portable binocular pupillometer consisting of a stereoscope-like frame with adjustable loupe and measure and a light-disk for separate stimulation of each pupil. It is strapped over the patient's eyes, allowing examination of unruly subjects, and gives uniform conditions of observation with exact quantitative data. (*b*) A disk deviometer for the objective determination and measurement of the angle of squint, giving horizontal and vertical deviation at a single reading. The patient is seated on one side, the surgeon on

the other, of a large glass pane marked off in squares, and the position of a small movable incandescent lamp determined with relation to a stationary central lamp serving as a point of fixation. The reflex images allow an easy, rapid, and exact measurement and notation of deviations, and the apparatus can be used on children and where the subjective method of Maddox is inapplicable, while it is particularly useful in paralytic and concomitant squint, pathological head attitudes, and the changes in the course of treatment by exercise, the amblyoscope, or operation.

43. FRANKE (Hamburg) — **Plastic operations on the lids and orbit** — recommends flaps with pedicle from brow or temple to be covered with mucous membrane on the side toward the eye, after removal of malignant tumors of the lids. For restoration of socket for an artificial eye Thiersch flaps are used, a prothesis introduced, and the lids sewed together after paring the edges. Sutures are removed after eight days, and the artificial eye worn day and night for some time.

Discussion: SCHWARZ (Leipzig) found in a case of extensive plastic restoration of the lower lid for defect caused by rodent ulcer, that no transplantation of mucous membrane was necessary as the conjunctiva regenerated perfectly of its own accord.

44. V. SICHERER (Munich) — **Ophthalmoscopic examinations in the new-born** — found retinal hemorrhages in 21% of 200 children within the first twenty-four hours after birth, bilateral in over half of the cases. They were generally situated at the posterior pole and at times extended rather far toward the periphery. The distribution and number vary greatly, and the disk may be entirely covered. Bluish gray discoloration of the nerve-head may be caused by hemorrhage into the sheaths, and occasionally disappears. In L. O. A. positions the right eye tends to be exclusively or mainly affected, in R. O. A., the left. Marked congestion of the vessels from disturbance of circulation in certain circumscribed vascular areas of the head during delivery are the cause of hemorrhages generally situated in the eye of the corresponding side. Central retinal hemorrhages may cause lasting damage to structure and development, and seriously interfere with function.

The relation to amblyopia exanopsia can only be determined by later examinations.

Discussion: LANGE (Braunschweig) saw extensive hæmatoma of the choroid in three cases of forceps delivery. V. HIPPEL (Heidelberg) was always unable to get complete mydriasis with atropin in the newly born, and suggests keeping cases with congenital lenticular opacity under surveillance for the development of zonular cataracts. As to the hemorrhages, the mechanical factor of external pressure on the skull cannot be the only factor, as he has found them in rabbit embryos removed from the interior of the uterus directly. Labyrinthine hemorrhages have been frequently found in the newly born. GUTMANN (Berlin) reports a case of inveterate bilateral detachment in an adult, which may have been congenital, as the patient had been extracted by forceps. SEEFELDER (Leipzig) found the hemorrhages more frequent after forceps delivery. UHTHOFF (Breslau) notes that the hemorrhages cannot be the cause of congenital amblyopia as has been claimed. V. HIPPEL (Heidelberg) has also given up this view. ELSCHNIG (Prague) does not believe that striate hemorrhages at the disk-margin are evidence of bleeding into the nerve sheaths, but more probably due to choroidal hemorrhage. A physiological excavation is often seen in the newly born. V. SICHERER found medium mydriasis sufficient for ophthalmoscopic examination. He had seen but one case of forceps delivery. There were no hemorrhages. Macular hemorrhage is exceedingly rare, so that permanent lesions do not generally result. Physiological excavation was frequently noted.

45. DIMMER (Graz) — **Subconjunctival extraction of cataract** —mentions as disadvantages of Czermak's method the formation of a conjunctival pocket after the corneal section has been made, insufficient covering of the end of the wound, difficulty of making the section from the lateral end of the wound, and the necessity of a second incision of the conjunctiva in case of prolapse requiring iridectomy. The advantages are the protection against secondary infection, closure of the wound in prolapse of vitreous, prevention of iris prolapse. These can be assured by making an incision through the conjunctiva 8*mm* long and the same distance from the cornea, running

from below and outward parallel to the limbus to a point in the upper inner quadrant, and forming a large pocket. The scleral section at the limbus is made in three phases, the middle with a knife 2. 5*mm* broad, running to a point, and the ends cut with angular crow-bill scissors with unequal blades. A suture is passed through the conjunctival wound, the capsule opened with a cystotome, and the lens delivered with two bent spatulæ by capsizing (Sturz-manœver). The suture is then tied. The operation can be done in 8–10 minutes and is suited to all forms of cataract. The only disadvantages are slight, such as protracted healing, rather frequent choroidal hemorrhage, and perhaps occasional necessity for an iridectomy downward and outward. Seventy-six cases were operated upon subconjunctivally in perfecting the procedure.

Discussion: KUHNT (Bonn) notes the danger in making a scleral section near the limbus, and of cutting into Schlemm's canal with the result of a copious hemorrhage into the anterior chamber. The operation is also made difficult by the pupil contracting and interfering with delivery of the lens, as in Czermak's operation. Ordinary extraction methods are successful in all but about 2% of the cases and for these it is hardly necessary to devise a new procedure. In case of special danger of infection, the section can be protected by a conjunctival flap (Kuhnt) just as well as by subconjunctival operation. SCHWARZ (Leipzig) attributes the frequent choroidal hemorrhages in Dimmer's procedure to the subconjunctival injection of cocain. GUTMANN (Berlin) has abandoned Angelucci's method which he formerly advocated. DIMMER states that the choroidal hemorrhages are not due to cocain, but to tearing through the ligamentum pectinatum.

46. COLLIN (Berlin) **Behring's tulase-preparations in ocular tuberculosis** — treated 25 patients with tulase-lactin and antitulase, hypodermically. The former is an active immunizing culture of human tubercle bacilli free from virulent germs The initial dose is $\frac{1}{100}$*mg.* which is doubled daily until *8mg.* are given. Antitulase is made from the serum of horses highly immunized against tulase-lactine. Initial dose, *100mg* rising to *2000mg.* Local and general reaction of a mild degree was noted in most cases. The preparations seem to

have a specific action and to hasten the healing of tuberculous foci in the eye. *Discussion:* Stock (Freiburg) finds these results similar to those obtained with TR. The latter is now used in very small doses only, about twice a week, and kept up for a long time. In this way fever and local reaction are avoided. Collin insists that tulase and TR are not at all the same. The latter has given bad results in the Berlin clinic, and it is a question whether fever and local reaction are not just what it is most important to produce.

47. Fleischer (Tuebingen)—**Inheritance of myopia**—reports examination of all the school children in a village in which high myopia was unusually common, reaching 3% in a population of 1350. Of 320 scholars there was myopia in 7.5%, astigmatism in 9.5%, refraction error in 21%, altogether. In 17 families there was high myopia of one parent, but an even 30% of these children had normal eyes. The high myopia appears to develop in school-years and to increase with age. Myopic crescent is frequently absent. In other cases it is situated below the disk and there is an ectasia at this point corresponding to the pre-existing thinning of the sclera found by Elschnig, particularly in families some of whose members showed a development of progressive myopia. In-breeding was common in this village, and it was an open question whether consanguinity was a factor in the etiology of myopia.

SYSTEMATIC REPORT ON THE PROGRESS OF OPHTHALMOLOGY IN THE THIRD AND FOURTH QUARTERS OF THE YEAR 1906.

By Dr. G. Abelsdorff, in Berlin; Prof. St. Bernheimer, in Innsbruck; Dr. O. Brecht, Prof. R. Greeff, Prof. C. Horstmann, and Dr. R. Schweigger, in Berlin; with the Assistance of Prof. A. Alling, New Haven; Prof. E. Berger, Paris; Prof. Cirincione, Genoa; Dr. Dalén, Stockholm; Prof. Hirschmann, Charcow; Dr. J. Jitta, Amsterdam; Mr. C. Devereux Marshall, London; Dr. H. Meyer, Brandenburg; Dr. P. von Mittelstädt, Metz; Dr. H. Schulz, Berlin; Prof. Da Gama Pinto, Lisbon; and others.

Translated by Dr. Percy Fridenberg.

Sections I.–III. Reviewed by Prof. C. HORSTMANN, Berlin.

I.—GENERAL OPHTHALMOLOGICAL LITERATURE.

622. Hirschberg, J. **History of ophthalmology.** *Graefe-Saemisch Hdbk.*, 2d ed., parts 109 and 110.

623. Oeller, J. *Atlas of Rare Ophthalmoscopic Findings.* Part 5. Wiesbaden, 1906.

624. Krueckmann, E. *Syphilis of the Iris. Plates for Instruction.* Published by Prof. Magnus, Breslau, 1906.

625. Rohmer. *Elements of Ophthalmology.* Paris, 1906.

626. Darier. *Lessons in Ophthalmic Therapeutics.* Third edition. Paris, 1906.

627. Truc, H., and Pansier, P. *History of Ophthalmology at the School of Montpellier from the XIIth to the XXth Century*, Montpellier 1907.

628. Pergens, Ed. **Studies in visual acuteness. The basis of scales for astigmatism.** *Annal. d'Ocul.*, cxxxvi., p. 461.

629. Marrio, E. **Comparative visibility of various test types.** *Annal. di Ottal.*, 1906, No. 10.

630. Lans, L. J. **Loss of working capacity from absence of an eye.** *Med. Tydsc., v. Geneesk.*, 1906, vol. ii., p. 3.

631. Fischer, Ph. *Question of Habituation to Monocularity and its Valuation in Accident Surgery.*

632. Hirsch, C. *Injuries of the Eye.* Berlin, 1906.

633. Bonhoff, K. *Report of University Eye Clinic*, 1903-4. I. D., Giessen, 1906.

634. Bock, E. *Report of Eye Department, County Hospital at Laibach*, 1906.

In this number Hirschberg (622, **History of ophthalmology**) concludes his study of Arabian ophthalmology and considers mediæval Europe, the cloister schools, and those of Salerno and Montpellier, the biography of Grapheus, Zacharias, and the history of eye-glasses.

Oeller's atlas (623, **Atlas of rare ophthalmoscopic findings**) shows 5 new plates and contains embolism (thrombosis) of the central retinal artery, gumma of the retina, detachment of retina, dislocation of lens, glaucomatous excavation, and solitary tubercle of the choroid.

Krueckmann (624, **Syphilis of the iris. Plates for instruction**) gives 4 color plates showing 9 drawings of syphilide of the iris from Sattler's clinic in Leipzig.

Rohmer (625, **Elements of ophthalmology**) aims to aid the beginner to remember the clinical pictures of the eye diseases. Stress is laid on the importance of practical experience and correct observation. Berger.

Darier's (626, **Lessons in ophthalmic therapeutics**) lectures on treatment include new observations of this author on serotherapy, radium, collargol, and argyrol. Berger.

Pergens (628, **Studies in visual acuteness. The basis of scales for astigmatism**) discusses the determination of astigmatism from the time of Thomas Young to the present. He describes the tests of Fischer and Gerson (1810), Purkinje (1825), Goulier, Donders, Green (1866), Becker, Snellen, Pray, Heymann (1870), and Burchardt. The work contains a number of interesting and new observations on the autogenous light of the retina, the threshold stimulus for visual perceptions, and a detailed demonstration of the factors, particularly form sense — concerned in viewing objects.

Marrio (629, **Comparative visibility of various test types**) shows practically that the test types of Pflueger, Kern, Parinaud, Snellen (5*m* distance), Landolt, Burchardt,

Roth (4*m* distance), are to be arranged in the order just given as to their advantages in the way of ease of deciphering, and readiness of interpretation, and that the types of Nicati give good results at the distance of 3.5*m* prescribed by him.

CALDERARO.

LANS (630, **Loss of working capacity from absence of an eye**) considers the loss of wage-earning capacity and the compensation by insurance institutions in connection with loss of one eye by accidental injury. The damages should not be more than 25% for work which does not require acute vision, and at least 30% in other cases. It should always be provisional, and be adjusted again after re-examination in two or three years. The percentages may be modified by age, later disfigurement, the development of photophobia and inflammation in the good eye, the absence of stereoscopic vision necessary for work, and poor vision in the remaining eye.

JITTA.

FISCHER (631, **Question of habituation to monocularity and its valuation in accident surgery**) estimates the annuity at 33 % for "qualified" workmen, who have lost one eye and have good vision in the other. The adjective applies to those who require binocular vision in their work, or who are exposed to injury, particularly to open fires, which need good sight to be avoided. Ordinary workmen should get only 25%.

HIRSCH (632, **Injuries of the eye**) discusses accidental injuries of the eye, their diagnosis and treatment, the question of damages and of simulation and aggravation.

BONHOFF (633, **Report of University Eye Clinic**) gives statistics of 1029 patients treated and of 70 cataract extractions. There were 2994 dispensary patients.

BOCK (634, **Report of Eye Department, County Hospital at Laibach**) treated 1490 patients in the institution. There were 115 cataract operations, 93 iridectomies, and 24 enucleations. All but 3 extractions were successful.

II.—GENERAL PATHOLOGY, DIAGNOSIS, AND TREATMENT.

635. DE SCHWEINITZ, G. E. **Concerning the signs in the retina of persistent high arterial tension and their diagnostic and prognostic import.** *Trans. Amer. Oph. Soc.*, 1906.

636. Ewing, A. E. **Bacillus pyocyaneus: Its virulence in the eye; its longevity, and immunity from it.** *Trans. Amer. Oph. Soc.*, 1906.

637. Holden, W. A. **Report of cases of polioencephalitis superior.** *Trans. Amer. Oph. Soc.*, 1906.

638. Hansell, F. H. **The ocular symptoms in a case of tumor of the pituitary body.** *Trans. Amer. Oph. Soc.*, 1906.

639. Kipp, C. J. **Concerning siderosis bulbi.** *Trans. Amer. Oph. Soc.*, 1906.

640. Gifford, H. **Some impressions of the Basle or inner pole magnet.** *Ophth. Record*, Feb., 1907.

641. Cogan, J. E. **Observations on methods of advancement.** *Ophth. Record*, Aug., 1906.

642. Griffin, O. A. **Syphon eye compress.** *Ophth. Record*, Oct., 1906.

643. Bruns, H. D. **The immersion treatment of purulent ophthalmia with argyrol solutions.** *Trans. Amer. Ophth. Soc.*, 1906.

644. Standish, Miles. **Silver preparations in conjunctival disease.** *Trans. Amer. Ophth. Soc.*, 1906.

645. Newcomet, W. S. **The therapeutic application of the X-ray in diseases of the eye.** *Annals of Ophth.*, Oct., 1906.

646. Posey, W. C. **Unusual success from iridotomy in eyes practically blind from iridocyclitis and complicated cataract.** *New York Medical Journal*, Aug., 1906.

647. Derby, G. S. **An experimental study of the bactericidal power of the various silver preparations.** *Trans. Amer. Ophth. Soc.*, 1906.

648. Meller, J. **Relation of Mikulicz's disease to lymphomatous and chronic inflammatory processes.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 177.

649. Lapinski. **Psychoses after eye operations.** *Allg. Zeitschr. f. Psych.*, lviii., 5.

650. Leber, A. **The immunity of the anterior chamber.** *Arch. f. Ophth.*, lxiv., 3, 413.

651. Possek, R. **Content of the vitreous in normal and acquired cytotoxins.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., 500.

652. Greeff, R. **Occurrence of vermes in the eye.** *Arch. f. Augenh.*, lvi., 4, 330.

653. Babe. **Occurrence of spirochætæ in the human eye.** *Deutsche med. Wochenschr.*, 1906, No. 48, 1905.

654. Knapp, H. *Prevention and Treatment of Venereal Eye Disease.* These Archives, xxxv., 6.

655. Scrini and Fortin. **Central scotoma in congenital amblyopia and its relation to childbirth.** *Arch. d'opht.*, xxvi., p. 710.

656. Segal, S. **Ophthalmoscopic observations.** *Wrasch. Gaz.*, 1906, p. 222.

657. Bietti, A. **Saprophytes in ocular infections.** *Annal. di Ottalm.*, 1906, p. 7.

658. Pagenstecher, A. **Pathology of streptococcus mucosus in eye diseases.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 530.

659. Silva, R. **Experiments on influence of zinc on diplobacillus of Morax-Axenfeld and Petit.** *Ibid.*, Supplement, p. 182.

660. Gasparrini, E. **Changes following extirpation of cervical sympathetic ganglion.** *Annal. di Ottalm.*, 1906, No. 8.

661. Del Monte, A. **Biology and morphology of the xerosis bacillus.** *Arch. di Ottalm.*, Feb., 1906.

662. Calderaro. **Anæsthesia in ocular surgery.** *Clin. ocul.*, 1906.

663. Meyerhof. **Persistence of micro-organisms in the conjunctiva and their rôle in Egyptian ophthalmia.** *Annal. d'Ocul.*, cxxxvi., p. 368.

664. Schirmer. **Prognosis and treatment of infected penetrating wounds of the globe.** *Deutsche med. Wochenschr.*, 1906, No. 31, p. 1268.

666. Guglionetti, L. **Oculistic radiotherapy. Cure of epithelioma.** *Annal. di Ottalm.*, Oct., 1906.

667. Isakowitz, J. *Magnet Operations on the Eye.* Nuremberg, 1906.

668. Schmidt, H. **Problem of encapsulation of bullets.** *Zeitschr. f. Augenheilk.*, xvi., Supplement, p. 63.

669. Hoppe. **Action of congestive hyperæmia (Bier) on normal eye and eye diseases.** *Klin. Monatsbl. f. Aughenheilk.*, xliv., ii. p. 389.

670. Hesse, R. **Congestive hyperæmia in external eye diseases.** *Centralbl. f. prakt. Augenheilk.*, xxx., 6, p. 167.

de Schweinitz (635, **Concerning the signs in the retina of persistent high arterial tension and their diagnostic and prognostic import**) thinks that the ophthalmoscopic findings should be considered as fully as important as the four recognized indications of high arterial tension in arteriosclerosis, namely: the condition of the pulse, the character of the heart sounds, and tracings on the sphygmograph, and readings of the sphygmomanometer. The eye lesions suggestive of high tension in arteriosclerosis are, uneven calibre and tortuosity, distinct light streak, and alterations in the veins. The pathognomonic signs are, beaded appearance of the arteries, lesions of the arterial wall in the form of perivasculitis, alternate contraction and dilatation of the veins, and particularly indentation of veins by stiffened arteries which pass over them. There may be also œdema and hemorrhages of the retina. The author points out the duty of the ophthalmologist to recognize the signs of arteriosclerosis and to warn his patient of danger to the eye and of even more serious results. Alling.

Ewing (636, **Bacillus pyocyaneus: Its virulence in the eye; its longevity, and immunity from it**) relates a case in which an eye was lost by infection with bacillus pyocyaneus starting in an abrasion of the cornea. His experiments upon animals show that severe inflammation of the cornea may follow instillation of an active culture into the conjunctival sac, especially if there be a previous injury. The culture seems to be very tenacious of life. Alling.

Holden (637, **Report of cases of polioencephalitis superior**) calls attention to a set of cases showing external ocular paralyses with pupil reaction and accommodation intact, and defines the differential diagnosis between these cases of ophthalmoplegia externa (polioencephalitis superior) and palsies due to basal meningitis and tabes. In the latter the intrinsic muscles are usually involved. He recites four cases of the disease, in two of which there was bulbar paralysis as well, showing involvement of the lower centres. Acute cases may be due to influenza or ptomaine poisoning and may recover, but those of alcoholic origin are frequently fatal. Some of the chronic cases are of obscure etiology. Alling.

Hansell (638, **The ocular symptoms in a case of tumor of the pituitary body**) saw the case of a man, fifty-three, who suffered from dimness of vision, drowsiness, and hallucinations, with slight paresis of the external rectus. There were also pallor of the optic nerves, contractions of the fields, and irregular bitemporal hemianopsia. At the autopsy a dark brown tumor was found occupying the site of the pituitary body and measuring *4cm* by *1cm*. The optic chiasm and tracts were compressed and atrophic. Alling.

Kipp (639, **Concerning siderosis bulbi**) laid stress upon a symptom, already described, which he thinks of great importance in cases where iron is retained within the eye. This is the appearance of yellowish-brown spots under the anterior capsule of the lens. They are round, less than one-half *mm* in diameter, and appear at regular intervals of about a *mm* or two in a circle about midway between the anterior pole and the equator. In all cases in which these were present a fragment of iron was found lodged within the eyeball back of the lens. Alling.

Gifford (640, **Some impressions of the Basle or inner pole magnet**) has had constructed a circular electro-magnet on the plan of that used by Mellinger in Basle. It has the advantages of great ease in manipulation of the small cores which may be used, but it is doubtful if it can equal the Haab instrument in magnetic force. Alling.

Cogan (641, **Observations on methods of advancement**) suggests passing the two ends as they come from the attachment of the suture to the muscle in making the advancement operation, in and out through the conjunctiva, about the cornea above and below, and tying them as they meet on the opposite side of the cornea. This method obviates the scleral stitch which so readily pulls out. Alling.

Griffin (642, **Syphon eye compress**) uses small rubber bags through which hot or cold water is constantly running by virtue of the fact that they are connected by tubing to a receptacle above containing the water and an empty one below the level. It requires no attention except to replenish the water. Alling.

Bruns (643, **The immersion treatment of purulent ophthalmia with argyrol solutions**) is an enthusiastic advocate of the use of argyrol, but favors frequent instillations every 15 to 20 minutes, day and night. Alling.

Standish (644, **Silver preparations in conjunctival disease**) is strongly in favor of argyrol in purulent ophthalmia. Out of 201 cases treated in the Massachusetts Charitable Eye and Ear Infirmary, only 2% had corneal ulceration subsequent to entering with clear corneæ. A novel method is suggested which allows of more continuous application. A dam of putty is built up about the eye and filled with a 25% solution of argyrol, and the patient encouraged to wink his eye, which is thus kept in a bath for fifteen to twenty minutes.

Alling.

Newcomet (645, **The therapeutic application of the X-ray in diseases of the eye**) treated epithelioma of the lid and nose with curettage and bi-weekly applications of X-ray. He claims to have cured the majority of the cases. In trachoma he recommends pushing treatment to the extent of producing a mild burn and does not fear the consequent reaction.

Alling.

Posey (646, **Unusual success from iridotomy in eyes practically blind from iridocyclitis and complicated cataract**) made iridotomies in eyes in which iridectomies and repeated needlings had failed to create clear pupils. By carefully studying the lines of tension and by making the incisions across these he was able to obtain permanent openings which gave excellent vision. Alling.

Derby (647, **An experimental study of the bactericidal power of the various silver preparations**) presents his experiments on silver preparations with the full appreciation of the impossibility of duplicating clinical conditions in the laboratory. Nitrate of silver is the most effective germicide. The staphylococcus aureus is killed in from two to five minutes by a 1 to 2% solution. Protargol is not as effective, but kills the staphylococcus in ten minutes in 2 to 4% solutions. Argyrol has very little bactericidal power; 10 to 50% solutions after one to two hours failed to destroy the aureus. The age of the solutions does not seem to affect their action. He suggests that the inefficiency of germicides in general in any but the most superficial processes is due to the neutralizing power of the blood serum within the tissues. Silver preparations he groups into three classes: those with low germicidal power, as argyrol; the more effective, as protargol; and the very active but irritating, such as nitrate of silver. Alling.

Meller (648, **Relation of Mikulicz's disease to lymphomatous and chronic inflammatory processes**) reports an observation by Mikulicz of marked swelling of the lachrymal gland and of all the salivary glands in a man, without other symptoms such as enlargement of spleen or other lymphatic glands. The blood was normal. The extirpated tear glands were found to contain large masses of round cells and greatly increased small cell content of the interstitial tissue. The tear gland is affected first, and appears to be the prime point of attack. The process is a parasitic or infectious lymphadenitis.

Lapinski (649, **Psychoses after eye operations**) observed an elderly man, affected with arteriosclerosis and digestive disturbances, who developed an acute hallucinatory psy-

chosis, which was cured, after operation for corneal ulcer of the single sound eye. The relation of such psychoses to eye operations is often coincidental, not specific, tending to develop in senile, arteriosclerotic individuals. Auto-intoxication is a factor.

Leber (650, **The immunity of the anterior chamber**) experimented on rabbits with typhoid bacilli and cholera vibriones, and found that the normal aqueous contains no agglutinins, which however are found in actively and passively immunized animals. The normal aqueous then becomes bacteriolytic. In immunization against cholera there is a decided increase of alexins in the lens and vitreous.

Possek (651, **Content of the vitreous in normal and acquired cytotoxins**) finds that the vitreous ordinarily contains no cytotoxins as long as the secretory organs of the eye are intact, even in highly immunized animals. Puncture or injection of salt solution, causing a change in the fluid secretion, is followed by a loss of the vessels of their retention capacity for hemolysins. This continues for some time.

Greeff (652, **Occurrence of vermes in the eye**) discusses trematodes, which occur in the fish lens; cystodes, such as cysticercus, the involution form of tænia solium, which has been found in the lids, conjunctiva, orbit, anterior chamber, vitreous, and beneath the retina. Echinococcus scolices have been found in the interior of the eye. Trichina, anematode or thread worm, has been seen in the eye muscles. Filaria loa may occur in the conjunctiva, anterior chamber, lens, or vitreous.

Babe (653, **Occurrence of spirochætæ in the human eye**) made serial sections of eyes of a fœtus with hereditary syphilis after immersion in silver solution. The stroma of cornea, iris, and choroid was full of spirochætæ, which were also found between the connective-tissue fibres of the sclera, while the lens and vitreous were entirely free.

Knapp (654, **Prevention and treatment of venereal eye disease**) advocates protargol and argyrol, the latter being less painful, in 5–25% solutions. In gonorrhœa we may have metastatic iritis, spongy or gelatinous iritis, or metastatic conjunctivitis. The last is very rare. Specific disease of the ciliary body may lead to perforation at the upper ciliary

margin. In tabes, syphilis was determinable as a cause in 75% of the cases. TREUTLER.

SCRINI and FORTIN (655, **Central scotoma in congenital amblyopia and its relation to childbirth**) found central scotoma in 45 cases. Vision is disproportionately reduced in some cases, while in others there is a large scotoma with less disturbance of sight. Macular hemorrhages intra partum are the probable cause of the scotoma. BERGER.

SEGAL (656, **Ophthalmoscopic observations**) advises simple splitting of the cornea in evisceration of the globe, and the application of sutures if necessary. There is less shrinking and a better stump results. Tattooing may be done later on. HIRSCHMANN.

BIETTI (657, **Saprophytes in ocular infections**) confirms Ulbrich's results of intense reaction of animal's eyes to injections of emulsions of saprophytic organisms in large quantities, while attenuated bouillon cultures were inactive. This with the absence of saprophytes in infections of the eye would show that we are not justified from animal experiments alone in concluding that these organisms are pathogenic.

CALDERARO.

PAGENSTECHER (658, **Pathology of streptococcus mucosus in eye diseases**) reports a case of metastatic panophthalmitis of both eyes, in a case of meningitis with general sepsis. Streptococcus mucosus was obtained in pure culture from the blood and cerebro-spinal fluid, and from the eyes.

SILVA (659, **Experiments on influence of zinc on diplobacillus of Morax-Axenfeld and Petit**) was unable to prove diffusion of a solution of zinc sulphate through the cornea into the anterior chamber. In test-tube experiments this astringent acts on the diplobacillus of Morax-Axenfeld as it does on that of Petit, confirming clinical observations. The therapeutic action of zinc is more antiseptic than disinfecting, preventing development rather than destroying organisms.

GASPARRINI (660, **Changes following extirpation of cervical sympathetic ganglion**) concludes from numerous animal experiments that extirpation of the ganglion causes degeneration of the optic nerve, ciliary ganglion, retina, and ciliary nerves. There are evident although less marked changes on the other side as well, with general blood changes and finally death.

Del Monte (661, **Biology and morphology of the xerosis bacillus**) finds that the bacillus of xerosis is a streptothrix which in its bacillary form reproduces the diphtheria type. It is always found in the latter form in the conjunctiva, although filamentous forms or even cocci may occur.

Calderaro.

Calderaro (662, **Anæsthesia in ocular surgery**) concludes after ten years, experience, that general anæsthesia is useless and harmful in ocular surgery except possibly in major operations in the depths of the orbit. Cocaine is sufficient for all other procedures, while narcosis by the attendant vomiting interrupts operations and deprives the patient of rest for a long time after through nausea and discomfort. Narcosis has been given up in Cirincione's clinic. Calderaro.

Meyerhof (663, **Persistence of micro-organisms in the conjunctiva and their rôle in Egyptian ophthalmia**) confirms the observation that summer epidemics of purulent conjunctivitis in Egypt are caused by Koch-Weeks bacillus, gonococci, or the Morax-Axenfeld diplococcus. Gonorrhœal ophthalmia develops two or three months after that produced by the Koch-Weeks germ. The organisms may have entered the conjunctival sac in winter, remaining latent until nurtured by the heat of summer. Treatment should begin in the winter months. Berger.

Schirmer (664, **Prognosis and treatment of infected penetrating wounds of the globe**) uses intramuscular injections of biniodide of mercury in perforating wounds of the globe and inunctions of from 6–9 grams of mercurial ointment, in addition to the usual methods, such as the actual cautery in recent cases, atropin, bandage, sweating, and hot applications later on. In this way 157 recent infected injuries were treated, and 80% of the cases of fibrinous, and 50% of purulent uveitis were cured. Of 41 eyes with foreign bodies, 27 were preserved.

Guglionetti (666, **Oculistic radiotherapy. Cure of epithelioma**) had excellent results and healing far surpassing the possibility of any plastic operation from the use of radiotherapy in 8 epitheliomas starting in the cutis of the lids and neighborhood of the eyes. The globe was carefully protected, and not the slightest harm was done to it in any case. In a

case of epithelioma of the limbus, temporary cure was effected, but recurrence was noted several months later.

CALDERARO.

ISAKOWITZ (667, **Magnet operations on the eye**) discusses the use of large and small magnets. In about one third of the cases thus operated on, useful vision is obtained, and the form of the eye preserved in a second third. The others are lost.

SCHMIDT (668, **Problem of encapsulation of bullets**) uses balls of ox bone sterilized and freed of organic matter by glowing heat, instead of glass spheres, after evisceration. In 4 out of 8 cases the implanted bone healed in and remained in situ, without causing reaction, for as much as 7 years. In the other cases the bone button was extruded in from thirteen days to thirteen weeks.

According to HOPPE (669, **Action of congested hyperæmia (Bier) on normal eye and eye diseases**), Bier's passive hyperæmia of the head or neck is by no means to be used indiscriminately. It requires control of rather difficult technique, and observance of a number of precautions, if the diseased eye is not to suffer. It should not be used for mild affections, or those which yield readily to other procedures. Medium congestion lasting for several hours will extend to the outer tissues of the globe and even to the interior. Diminution of inflammatory pain and increased absorption of exudate were generally noted. The procedure greatly aids the action of atropin in stubborn cases, probably by preventing the solution from draining off through the lachrymal channels and thus keeping the solution in the conjunctival sac for a longer time than usual. Hoppe used a sort of dry cup fitting over the eye. A case of hypopyon keratitis was cured in this way.

III.—MEDICAMENTS AND INSTRUMENTS.

671. BERTOZZI. **Comparative action and local toxicity of atropin and homatropin.** *Annal. di Ottalm.*, 1906, p. 1.

672. SCHANZ, F. **Collargol in ophthalmology.** *Zeitschr. f. Augenheilk.*, 16, Supplement, p. 61.

673. STEINKUEHLER, M. **Protargol.** *Wochens. f. Therap. u. Hyg. d. Aug.*, ix., 6.

674. MOREAU and GRANDCLEMENT. **Certain disadvantages of protargol.** *Rec. gén. d'opht.*, xxv., p. 542.

675. Haap. **Mitin, a new ointment base.** *Wochens. f. Therap. u. Hyg. d. Aug.*, 1906, 3.

676. Aubaret. **New model campimeter.** *Arch. d'ophtalm.*, xxvi., p. 693.

According to Bertozzi (671, **Comparative action and local toxicity of atropin and homatropin**), methyl atropin bromide has an action similar to that of atropin, but of shorter duration, and does not paralyze accommodation. Homatropin hydrobromate, in solutions of ½–1%, paralyzes the fibres of the sphincter but has no effect on the dilator, so that it can be used for differential diagnosis between paralytic and spastic meiosis.

Calderaro.

Schanz (672, **Collargol in ophthalmology**) has had good results from collargol ointment, 1–2%, in corneal ulcer. A 1% aqueous solution is advised for irrigation of the anterior chamber.

Steinkuehler (673, **Protargol**) claims that protargol solutions should always be prepared with cold water, never be warmed, and always be freshly prepared as they are otherwise irritating from the development of free acid.

Moreau and Grandclement (674, **Certain disadvantages of protargol**) saw corneal ulcer develop in the course of 2 cases of gonorrhœal ophthalmia and 1 of pneumococcus conjunctivitis in the newly born treated by means of protargol, which they hold responsible, and claim should not be used in stronger solutions than 5%. Berger.

Haap (675, **Mitin, a new ointment base**) describes mitin as a smooth indifferent substance without odor, which is easily rubbed up, does not decompose, and combines easily with various drugs. As a lid salve it has a marked sedative and cooling action.

Aubaret's (676, **New model campimeter**) perimeter consists of a metal plate with a semicircular arm marked in degrees. The patient fixes the centre of the semicircle; the test object, which is attached by a thread to the middle point as well as to its tangent, being moved toward the centre until it is recognized. The meridians are read off on a disk behind the metal plate. The apparatus is intended mainly for use at the bedside. Berger.

Sections IV.–VII. Reviewed by Dr. ABELSDORFF, Berlin.

IV.—ANATOMY.

677. Kitamura, S. **Congenital microphthalmus and lid-bulbus-cysts, from studies on pigs' eyes.** *Klin. Monatsbl. f. Augenheilk.*, xliv., p. 109.

678. Bergmeister, R. **Theromorphy in the eye of a child.** *Arch. f. Ophth.*, lxv., i., p. 155.

679. Bernheimer, St. **Congenital anophthalmus and the visual paths.** *Ibid.*, p. 99.

680. Kuesel. **Embryology of lachrymal canaliculi.** *Zeitschr. f. Augenheilk.*, xvi., Supplement., p. 54.

681. Matys. **Development of lachrymal system.** *Ibid.*, xvi., 4, p. 303.

682. Lauber, H. **Anatomical studies on heterochromia in deaf, partially albinotic cats.** *Ibid.*, p. 326.

683. Elschnig, A. **On so-called agglomerated cells (Klump Zellen), clump cells, of the iris.** *Academ. Anzeiger*, Nr., xii., Vienna, 1906.

684. Toufescu, S. **The normal lens.** *Annal. d'Ocul.*, cxxxvi., p. 463.

685. Opin. **The commissure of Hanover.** *Arch. d'opht.*, xxvi., p. 545.

Kitamura (677, **Congenital microphthalmus and lid-bulbus-cysts, from studies on pigs' eyes**) examined pigs' eyes with the clinical appearance of anophthalmus. Anatomical investigations revealed microphthalmus. There was a lack of differentiation of cornea from sclera, and absence of Bowman's and Descemet's membrane; the cataractous lens occupies the anterior chamber, the tissue of the iris is not recognizable as such, the lens capsule is adherent to the posterior surface of the cornea. The choroid is not fully developed; the retina, rudimentary. The vitreous is filled with tissue and connecting strands. An epibulbar cyst communicates with the interior of the globe. Its inner lining is continuous with the atypically developed retina. A connective-tissue strand representing the optic nerve entered the globe at the posterior and upper attachment of the cyst. The invagination of the secondary optic vesicle had already taken place, as shown by the presence of the pigment layer of the retina. The mechanical interference with the regular

closure of the fœtal eye cleft caused by the connective-tissue strand, and the intraocular-tissue formation are the main factors in the development of the microphthalmus.

Bergmeister (678, **Theromorphy in the eye of a child**) found hypoplasia, rudimentary development and folding of the pars optica retinæ, the pigment layer not being involved, in the left eye of a child of seven months which had died of keratomalacia. Mesodermal tissue was found to enter the imperfectly developed globe through dehiscences in the pigment layer and spread between the retinal layers. There was neither macula nor fovea, the rods and cones were sporadic and rudimentary, while blood-vessels from the mesoderm ramified in the nuclear layers. Papillæ grew into the vitreous from the pars ciliaris. The entire condition is one of reversion to a lower type of eye, that of the fishes, with the well known processus falciformis or campanula, a sickle-shaped connective-tissue fold which enters the globe below the nerve entrance and extends to the iris.

Bernheimer (679, **Congenital anophthalmus and the visual paths**) examined the brains of four rats with congenital anophthalmus and absence of optic nerve and corresponding unilateral visual paths, but with normally developed optic tract, corpus geniculatum, and thalamus. The nerve of the normal eye could be followed through the asymmetric chiasm into the visual centres of the contralateral hemisphere. The crossed and uncrossed fibres of the optic tracts could be studied in their natural position on both sides. The uncrossed fibres were more numerous than was to be expected in animals with a comparatively small combined visual field, being at least $\frac{1}{5}$–$\frac{1}{6}$ of the crossed variety. This supports the view that in man a large combined field is supplied by an approximately equal number of crossed and uncrossed fibres; as the number of uncrossed fibres increases with the extent of the combined field as we go up in the animal scale, and all fibres, those for the periphery as well as the macular fibres, crossed and uncrossed, of the visual tract are irregularly distributed in entering the external geniculate body, so that an isolated representation of the macula in the occipital lobe is impossible.

Kuesel (680, **Embryology of lachrymal canaliculi**) reports

a number of cases of congenital slit formation in the upper wall of one or both canaliculi, the rest of the lachrymal tract being normal. This seems to support Halben's theory that the canaliculi are formed by late proliferation from the lid margin and not by extension from the epithelium of the tear sac. In this case there was simply arrest of development with failure of the slits to become bridged over.

Matys (681, **Development of lachrymal system**) continues his studies of the development of the lachrymal passages, and takes up birds, swine, and man. In the first group, the rudiment begins at the base of the lachrymal furrow and afterwards becomes separated from the epiblast and forks, forming the duct below, and the canaliculi at the upper end. The conditions in swine and in man are mechanically the same.

Lauber (682, **Anatomical studies on heterochromia in deaf, partially albinotic cats**) examined the eyes of two blind white cats with heterochromia, and confirmed Abelsdorff's findings. The light blue eyes were devoid of mesodermal pigment, *i. e.*, the dark brown cells of the choroid and sclera, and the light brown pigment of the iris, while cells of ectodermal origin, as the pigment epithelium, and that of the ciliary processes and posterior surface of the iris, were normally pigmented.

Elschnig (683, **On so-called agglomerated cells (Klump Zellen), clump cells, of the iris**) deals with the deeply pigmented "Klumpen Zellen" of the iris, first described by Koganei in 1885. He concludes from topography and from morphologic and chemical characteristics that they are derivates of the epithelial layer. They probably develop when the muscular tissue begins to form by the proliferation of epithelial cells into the iris stroma.

Toufescu (684, **The normal lens**) reports the results of studies of the lens and zonule. The latter is formed of two kinds of fibres, one variety pale, resembling those of the vitreous, and dark, strongly refracting fibres. In the vascular capsule of animals it was possible to prove Retzius's finding that zonule fibres originate in the vessel walls. Toufescu claims that the suspensory ligament of the lens is of mesodermal origin. Berger.

Opin (685, **The commissure of Hanover**) considers it probable that the fibres of Hanover's commissure originate in the

pedunculus of the septum lucidum, which receives fibres from the olfactory nerve, so that the commissure can have no vasomotor influence, but is an association tract.

BERGER.

V.—PHYSIOLOGY.

686. FISCHER, F. **Fixation of the lens form by freezing.** *Arch. f. Augenheilk.*, lvi., 4, p. 342.

687. KUESEL. **Action of individual parts of the ciliary muscle on the ligamentum pectinatum.** *Klin. Monatsbl. f. prakt. Augenheilk.*, xliv., 2, p. 80.

688. ROENNE, H. **Cases of congenital color blindness.** *Ibid.*, Series xliv., Suppl., p. 193.

689. HERTEL, E. **Experimental study of light contraction of pupil.** *Arch. f. Ophth.*, lxv., 1, p. 107.

690. RAEHLMANN, E. **Anatomico-physical theory of light and color perception.** *Zeitschr. f. Augenheilk.*, xvi., 5, p. 448.

691. BERNSTEIN. **New theory of color sensation.** *Naturw. Rundsch.*, xxi., p. 497.

692. PFLUEGER, E. **Formation and qualitative conditions of aqueous humor.** *Arch. f. Ophth.*, lxiv., 3, p. 445.

693. TUERK, S. **Investigation of currents in the anterior chamber.** *Ibid.*, p. 481.

694. MUENCH, K. **Mechanics of iris movements.** *Ibid.*, p. 339.

695. NAGEL, W. A. **Symptoms and diagnosis of congenital defects of color sense.** *Zeitschr. f. Sinnesphys.*, xli., 4, 239.

696. GAUDENZI. **Cerebral projection of visual image.** *Arch. di Ottalm.*, 1906.

697. BONANUCO. **Sensibility of the surface of the eye.** *Ann. di Ottalm.*, iii., 1906.

698. POLIMANTI, O. **Motor valence of the pupil.** *Arch. di Ottalm.*, 1906.

699. LODATO, G. **Oxidizing power and oxidation of ocular tissues and fluids and the influence of light and dark.** *Ibid.*, 1906.

700. LINDQVIST. **A unit for the measurement of the minimum perceptible of light.** *Upsala laekase. foeren. foerh.*, 1906, 3233.

701. DE VRIES, M. **Phenomenon of v. Genderen-Stort.** *Ned. Tyds. voor Geneesk.*, 1906, ii., 6.

FISCHER (686, **Fixation of the lens form by freezing**) fixed the lens form of the dove by freezing with liquid air or carbonic acid gas, after producing accommodation spasm with nicotine or paralysis with strophantin. He finds that this method has inherent sources of error, as freezing alone produces changes of form. Only slight differences could be noted between the accommodative and resting form of the

lens, except that the completely isolated lens tends to assume the globular shape.

According to Kuesel (687, **Action of individual parts of the ciliary muscle on the ligamentum pectinatum**) contraction of the meridional fibres of the ciliary muscle does not facilitate filtration of aqueous into the iris angle, but rather prevents it, as traction tends to close the meshes of the ligamentum pectinatum. This fore and aft traction is, however, modified by the inward traction of the circular fibres, and this tends to take the strain off the ligamentum. Of the radial fibres of the ciliary muscle those which arise from the inner wall of Schlemm's canal and the meridional fibres gradually take a circular course, widen the ligamentum, dilate the sinus, and assist accommodation, by their action on the choroid and zonule.

Roenne (688, **Cases of congenital color blindness**) reports two cases of total congenital color blindness in the offspring of a consanguineous union. There were photophobia, nystagmus, and diminished vision. Examination showed a color sense corresponding to the twilight perception of the normal eye, shortening of the red end of the spectrum, and very rapid adaptation for maximal vision. All this is explicable on the assumption of loss of an apparatus for light adaptation.

Hertel (689, **Experimental study of light contraction of pupil**) illuminated the eye with spectral and with undecomposed light after section of the optic nerve to determine the possibility of pupillary contraction. In rabbits and cats, contraction followed the use of the electric arc light; gas and diffuse daylight having no effect. A similar reaction, gradual narrowing of the pupil without consensual reaction in the other eye, was obtained with the arc light in a case of traumatic optic nerve atrophy, with loss of light perception and of consensual reaction in the other eye. Light concentrated on the pupil had no effect, while illumination of the iris tissue was positive owing to direct action of ultra-violet rays on the sphincter.

Raehlmann (690, **Anatomico-physical theory of light and color perception**) proposes the theory that the inner members of the rods and cones react qualitatively to various wave lengths. The sharp sight and better color perception at the

macula is due to the axis of the visual cells being more at right angles to the line of sight. The outer members act as reflectors producing static rays at the plane of contact with the inner member. Cephalopods, requiring no color perception in the depths of the sea, have merely a sort of blind, in the form of phototropic pigment surrounding each rod, for adaptation.

Bernstein (691, **New theory of color sensation**) assumes a primordial black-white sensation which developed by separation into its components, yellow-blue first. The white-centre is permanent, but higher situated centres for other colors are formed. Simultaneous stimulation explains the "white values" of colors. Stimulation of a color centre is associated with inhibition of the opposite color. This hypothesis is meant to explain white mixtures by combination of complementary colors and the phenomena of contrast.

Pflueger (692, **Formation and qualitative conditions of aqueous humor**) determined the amount of aqueous in dogs by ligation of the carotid and subclavian, keeping up the intraocular pressure by a mercury manometer, and measuring the amount of salt solution filtering out in a given time. In small animals the secretion amounts to 6–8*ccm* a minute. After complete, transitory anæmia, the intraocular exchange of fluid increases, owing to minute lesions of the capillaries and filtration membranes. Double ligation of the common carotids causes only slight decrease in the amount of aqueous secreted.

Tuerk (693, **Investigation of currents in the anterior chamber**) considers Ehrlich's line a phenomenon due to currents in the interior of the eye. It appears after injections of fluorescin into the blood current of rabbits, as a vertical green line on the posterior surface of the cornea. The depths of the aqueous being warmer than that part near the cornea, and the pupillary area deeper, hence more removed from the heat source, there is a tendency to gravitation at the centre and to upward motion at the periphery. Heat and cold applied directly to the cornea can be seen to modify these currents, which may also explain the arrangement of triangular deposits on Descemet's membrane.

Muench (694, **Mechanics of iris movements**) lays stress on

the absence of elastic tissue in the vessels of the iris, their tortuosity being a passive condition. Accordingly the iris is in a state of static equilibrium when this tortuosity has been overcome, *i. e.*, in medium meiosis. After death the pupil is dilated, becoming narrow after rigor mortis has disappeared together with the tonus of the predominating dilator muscle. During mydriasis the tissue of the iris is compressed by the dilator fibres, the vessels themselves having no muscles, and by the stroma cells. Physiological ectropion of the pupillary margin is due to active contraction of the stroma cell net which is connected with the sphincter by radial strands. Contraction furrows in the ciliary zone are formed by the same network tending to draw anterior and posterior surfaces of the iris together, and the narrowing of the sphincter accompanying mydriasis, by its tension on the muscle bundles at the pupillary margin. The radial action of the network of stroma cells also explains the predominance of the pupillary zone in the play of the pupil. Dilatation takes place more slowly than contraction on account of the opposition of the reefed blood-vessels and their contents and the crowding of the tissue planes, and the successively increasing centripetal trend of the circular elastic fibre strands between the muscle rings of the sphincter.

Nagel (695, **Symptoms and diagnosis of congenital defects of color sense**) considers all cases of defective color vision as anomalous trichromatics. They may be detected by their judgment of homogeneous yellow, as they either add too much red or too much green to their red-green equation in color mixing. They are more dependent on the intensity of the color stimulus for exact perception than the normal, requiring also a larger visual angle and more time for recognition. Nagel's pseudo-isochromatic tables are practically useful for detection.

Gaudenzi (696, **Cerebral projection of visual image**) shows that when an after-image is produced in a normal eye at a point corresponding to the blind spot of the other eye, its appearance in the visual field of the resting eye corresponds to a point, the nerve head, which has no nervous elements or connecting paths. Calderaro.

Bonanuco (697, **Sensibility of the surface of the eye**) finds

that the cornea of normal and diseased eyes has pain and temperature sense but no tactile sensibility, the latter being an attribute of the conjunctiva of the globe, which is also particularly sensitive to cold. The conjunctiva of the lids has little tactile sense. CALDERARO.

POLIMANTI (698, **Motor valence of the pupil**) shows that the threshold stimulation values of various sections of the spectrum are determining factors in the regulation of pupillary innervation, and that the motor values of the pupil and the luminous values of the light rays are practically identical. CALDERARO.

LODATO (699, **Oxidizing power and oxidation of ocular tissues and fluids and the influence of light and dark**) finds that the tissues of the eye have oxidizing properties decreasing in the following order of intensity: retina, optic nerve, uvea, cornea. Red light increases this property of the retina. CALDERARO.

DE VRIES (701, **Phenomenon of v. Genderen-Stort**) discusses the phenomenon of v. Genderen-Stort, who, in 1884, noted that in frogs' eyes exposed to light the cones were retracted between the inner members of the rods, while after adaptation to dark they were extended ad maximum. This occurs in the small cones without oil globules as well as in the large ones which have them. In double cones, the accessory cones were immovable, and only the principal cones were contractile. Light causes transportation of pigment toward the nuclear layer, blanching of the rod-purple, and variations in the cones. JITTA.

VI.—REFRACTION AND ACCOMMODATION.

702. HESS, C. **Treatment of myopia.** *Arch. f. Augenheilk.*, lvi., 2, p. 133.

703. FRENKEL, H. **Relation of anisocoria and anisometropia.** *Annal. d'ocul.*, cxxxvi., p. 261.

704. TERRIEN, F. **Anatomy of the myopic eye.** *Arch. d'opht.*, xxvi., p. 737.

705. DE FALCO, A. **Total correction of myopia and ocular fatigue.** *Arch. di Ottalm.*, Sept., 1906.

706. POOLEY, T. **Transient myopia due to traumatism.** *Trans. Amer. Ophth. Soc.*, 1906.

707. GOULD, G. **Life and career blighted by ignored eye-strain.** *Ann. of Ophth.*, July, 1906.

708. Baker, A. **Statistics on relief and cure of eye-strain by correction of ametropia.** *Ophth. Record*, Jan., 1907.

Hess (702, **Treatment of myopia**) disposes of the objections to full correction. There is no increase of intraocular pressure with accommodation; marked diminution of the size of the object, which has not been proven, can do no harm to the eye. The complaint of fatigue may be due to unaccustomed demands on the ciliary muscle, faulty interpupillary distance, or prismatic action due to use of distance glasses for reading. Glasses of 20 D and more are well borne permanently and do no harm. Of course they cannot prevent progression of myopia. In medium degrees, full correction is of great importance, in low degrees, 1–2 D, it is not material.

Frenkel (703, **Relation of anisocoria and anisometropia**) finds that there is no definite relationship between anisocoria and anisometropia, the latter generally occurring without pupillary inequality. In the rare cases in which both conditions were present the wider pupil was not always on the side of the higher refraction. Berger.

Terrien (704, **Anatomy of the myopic eye**) gives anatomical proof that all changes in myopic eyes can be explained by distension of the posterior segment. The anterior segment, too, shows marked changes, such as recession of the ora serrata, flattening of the iris angle, small tears of Descemet's membrane. There is no basis for Stilling's theory of the changes in myopia being analogous to those of hydrophthalmus. Berger.

De Falco (705, **Total correction of myopia and ocular fatigue**) bases the curative value of total correction in myopia on the fact that accommodation for distance and near work, respectively, are antagonistic, and that disturbances of accommodation are beneficially affected by elimination of the myopia. Calderaro.

Pooley's (706, **Transient myopia due to traumatism**) patient was struck in the eye by a piece of steel. There was hyphæma and hemorrhage from a vein near the optic nerve. After disappearance of the blood he had a myopia of -5 D. Later his vision was $\frac{20}{15}$ with $+1$ D. Alling.

Gould (707, **Life and career blighted by ignored eye-strain**) recites the case of a man, twenty-nine, who consulted him with

paralysis of the right internal rectus, ptosis, cycloplegia, and paralytic mydriasis. The refraction he found to be: R, +0.25 D +0.62 D, cy. 180°, $\frac{20}{20}$; L, +0.25 D, cy. 180°, $\frac{20}{20}$; and attributes the patient's lesions to the fact that this error(?) had been uncorrected. Similar emanations from the same source are becoming too frequent for the good of American ophthalmological literature. ALLING.

BAKER (708, **Statistics on relief and cure of eye-strain by correction of ametropia**) tabulates the results of treatment of 100 patients who suffered from migraine. He concludes that the predominating cause is astigmatism especially when the axes are oblique. Anisometropia and heterophoria are also frequent causes. ALLING.

VII.—MUSCLES AND NERVES.

709. v. HIPPEL, E. **Rare cases of paralysis of accommodation and of the pupil.** *Klin. Monatsbl. f. Augenheilk.*, xliv., 2, p. 97.

710. GEISSLER, O. **Strabismus sursum vergens with consecutive torticollis, cured by tenotomy of superior rectus.** *Ibid.*, p. 374.

711. ADAM, C. **Normal and abnormal retinal localization in squint.** *Ibid.*, p. 10.

712. WESENBERG, W. **Contribution to disturbances of ocular muscles.** *In. Diss.*, Rostock, 1906.

713. GALLUS. **Two rare cases of ocular paralysis.** *Niederrh. Sitzungsber.*, Bonn, 1906.

714. STEINERT and BIELSCHOWSKY. **Physiology and pathology of vertical gaze.** *Muench. med. Woch.*, 1906, Nos. 33 and 34.

715. THIELE and GRAWITZ. **Senile atrophy of the eye muscles.** *Deutsche med. Wochenschr.*, 1906, 31, p. 1237.

716. BLOCH, E. **Voluntary dilatation of the pupil.** *Ibid.*, p. 1777.

717. REICHARDT, M. **Dilatation of the pupil at will.** *Ibid.*, 4, p. 142.

718. HUEBNER, H. **Reaction of the pupil, particularly to psychical and sensory stimuli.** *Arch. f. Psych.*, xli., p. 1016.

719. LEVY, M. **Pain reaction of the pupil as a differential diagnostic sign between organic and psychogenic pressure pain.** *Neurolog. Centralbl.*, No. 20.

720. KUTNER, R. **Abnormal exhaustion of pupillary light reaction.** *Centralbl. f. Nervenh. u. Psych.*, xxix., p. 825.

721. GALEZOWSKI, J., and BEAUVOIS, A. **Paralyses of VIth pair, tenonitis in ophthalmic herpes.** *Rec. d'opht.*, xxviii., p. 654.

722. ROCHON, D. **Probable tuberculosis of ocular muscles.** *Soc. d'opht. de Paris*, July 3, 1906.

723. DIEULAFOY. **Oculomotor paralysis in diabetics.** *Presse Med.*, xiii., p. 82.

724. Rouvillois. **External ophthalmoplegia symptomatic of fracture of petrous bone.** *Rec. d'opht.*, xxviii., p. 401.

725. Hansell, H. **Case of double external rectus paralysis of traumatic origin.** *Ann. of Ophth.*, Oct., 1906.

726. Howe, L. **Lifting power of the adductors and tensile strength of the recti.** *Amer. Jour. of Ophth.*, July, 1906.

v. Hippel (709, **Rare cases of paralysis of accommodation and of the pupil**) reports isolated paralysis of accommodation in a healthy subject, aged twenty, and a similar condition with normal pupils in two epileptics, and the case of a man of twenty-six with total paralysis of accommodation with mydriasis and pupillary rigidity, alternating and again simultaneously in both eyes, returning to normal after several days. Double mydriasis with loss of reflex and paralysis of accommodation was also observed in a case of suspected tabes.

Geisler's (710, **Strabismus sursum vergens with consecutive torticollis, cured by tenotomy of superior rectus**) patient, aged eighteen, had had strabismus sursum vergens of the right eye, with diplopia, of six years' standing. Compensatory contraction of the left sterno-cleido-mastoid muscle had produced marked torticollis. Tenotomy of the superior rectus cured the squint and diplopia and caused disappearance of the wry neck.

Adam (711, **Normal and abnormal retinal localization in squint**) examined 300 squints, of which 100 were able to give exact data of localization. This was abnormal in $\frac{2}{3}$ of the cases, and was most marked in those cases in which uncorrected vision in the squinting eye was greater than $\frac{1}{20}$, and less than half the vision of the fixing eye. The vision of the pseudo fovea used in eccentric fixation is at times higher, at times lower than a corresponding retinal point in the fixing eye. Binocular vision is rarely, binocular stereoscopic vision never, found with abnormal localization. Normal localization generally returns soon after operation. Inveterate abnormal localization caused diplopia after operation in two cases.

Wesenberg (712, **Contribution to disturbances of ocular muscles**) reports a case of "so-called paralysis of divergence" in a woman of thirty-eight with slight alternant convergent squint, homonymous diplopia; $8\frac{1}{2}$ months after tenotomy of the left internus, the double vision disappeared. As double

abducens paralysis could be excluded, and there was no disturbance of accommodation such as would have accompanied spasm of convergence, insufficiency of divergence was assumed as the original defect. A man of twenty-five showed voluntary inward rotation of the left eye while the other remained in the primary position. R, +1 D, V=$\frac{5}{5}$; L, +1.25 D, V=$\frac{5}{12}$. The voluntary squint is associated with accommodation of 4–5 D and −4 is required for clear distant vision of the right eye at such times, while squint does not take place when the right eye is used for reading with a +4 D glass.

Gallus (713, **Two rare cases of ocular paralysis**) reports the case of a man of forty-three who suddenly developed complete paralysis of upward motion of both eyes, associated with vertigo. A hemorrhage in the region of the oculomotor nuclei was the probable cause. A man of thirty-one showed typical paralysis of convergence with unimpaired action of the interni. The left disc was pale, and extreme rotation of the right eye was accompanied by nystagmus. There was no neurological evidence of value for a diagnosis.

Steinert and Bielschowsky (714, **Physiology and pathology of vertical gaze**) report paralysis of vertical movements with insufficiency of convergence and normal lateral motion after paralytic stroke, in a workman aged forty-eight. There was no spontaneous diplopia. This improved later on, and after fixing central objects, the eyes could be raised to the normal extent. The lesion was probably situated near the nuclei for the third pair. Two other cases of conjugate paralysis of upward rotation with preservation of "reflex" movement are recorded.

Thiele and Grawitz (715, **Senile atrophy of the eye muscles**) made a histological examination of the eye muscles of a woman of seventy, who during life had had an isolated bilateral ptosis. Degeneration of the protoplasm, loss of cross striping, and fatty changes were found in the levator palpebræ, but similar changes were found in all the other unparalyzed eye muscles of this patient as well as in those of other senile individuals who had never had ptosis.

Bloch (716, **Voluntary dilatation of the pupil**) reports the case of a morphine habitué, who had no meiosis and was

able to dilate his pupils at will while the visual axes remained parallel, by concentrating his thoughts on dilatation, and holding his breath for 3–4 seconds. Breathing naturally, the mydriasis comes on more slowly and disappears sooner. The observation speaks in favor of the existence of association fibres between the cerebral cortex and the dilator centre.

Reichardt (717, **Dilatation of the pupil at will**) thinks that in Bloch's case there may have been active slacking of accommodation rather than voluntary control of dilatation, and this could only occur with active divergence of the visual axes.

Huebner (718, **Reaction of the pupil, particularly to psychical and sensory stimuli**), testing the so-called attentional and representational reflexes, found only that normally every psychical process is accompanied by dilatation of the pupil, even to the attraction of attention to a bright object situated aside from the visual axis. Dilatation, as a psychical reaction, took place more slowly than contraction to light. In experimental alcohol intoxication it increased rapidity, and amplitude of contraction was noted. Psychical and sensory reaction and pupillary restlessness are absent in functional psychoses, without disturbance of the light reflex, but this occurs in organic disease only when the light reflex is absent or sluggish.

Levy (719, **Pain reaction of the pupil as a differential diagnostic sign between organic and psychogenic pressure pain**) notes that the pupil strongly contracted by bright light dilates under painful pressure on organically diseased parts of the body, while the reaction does not take place in psychogenic pressure pain.

Kutner (720, **Abnormal exhaustion of pupillary light reaction**) observed a man of twenty-six, who had had syphilis six years before and showed signs of beginning tabes. The right pupil reacted to light and was wider than the left. After eight to fifteen illuminations there was no light-contraction, either direct or consensual, but the reaction returned after ten to thirty minutes stay in the dark. Both pupils reacted well and without becoming fatigued, with convergence, even after the right pupil had become exhausted by repeated exposure to light.

Galezowski and Beauvois (721, **Paralyses of VIth pair, tenonitis in ophthalmic herpes**) report two cases of homolateral abducens paralysis complicating herpes zoster of the eye. In one case, that of a woman of seventy-five, there was a mild iritis; in the other, a man of eighty-two, a pneumonia had preceded the herpes. There was also oculomotor palsy, neuroparalytic keratitis, scleritis, and tenonitis of the affected side. The abducens paralysis was probably due to an extension of the neuritis from the trigeminus to nerve fibres which, according to Sappey, connect it with the abducens, and thus to the latter. Only three similar cases are on record.

Berger.

Dieulafoy (723, **Oculomotor paralysis in diabetics**) reports a case of oculomotor paralysis and 2 of abducens paralysis in diabetes, and reviews 57 cases of ocular paralyses in diabetics. Of these 35 affected the abducens, 11 the oculomotor nerve, and 5 the trochlearis, while in 6 there was external ophthalmoplegia. Orbito-temporal neuralgia is a frequent prodromal symptom. Both diabetes and ocular palsies may be due to a lesion of the nuclei in the floor of the fourth ventricle.

Hansell (725, **Case of double external rectus paralysis of traumatic origin**) saw a man who had been struck on the head with a piece of ice producing a scalp wound over the posterior part of the parietal and the occipital bones. Three weeks after the injury he developed a double external rectus paralysis. The late appearance of the paralysis is explained by the gradual increase in pressure by the exudation from a meningitis or by involvement of the nerves by the inflammation due to a fracture. Alling.

Sections VIII.-XII. Reviewed by Dr. R. SCHWEIGGER, Berlin.

VIII.—LIDS.

727. Morax. **Multiple xanthelasma with facial and cephalic localization.** *Soc. d'opht. de Paris*, Oct. 9, 1906.

728. Reissert. **Lid reflexes.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 378.

729. Santa-Maria, A. **Spastic blepharoptosis.** *Clin. Oculist.*, May, 1906.

730. Skorobogatow, A. **Indication for entropion operations of Snellen, Watson-Junge, and Panas.** *Westn. Ophth.*, 1906, No. 5.

731. Reuchlin, H. **Case of congenital chondroma at the inner lid angle.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 242.

732. Albrecht, K. **Case of cirsoid neuroma of upper lid.** *Beitr. z. klin. chir.*, 1., ii., 2.

733. Charles, J. **Angioma of upper lid. Operation.** *Interst. Med. Jour.*, 9, 1906.

Morax (727, **Multiple xanthelasma with facial and cephalic localization**) demonstrated a boy with xanthelasma of both lids, the cheek, the skin between the nostrils, the scalp, and the skin behind the ears. The affection is probably of parasitic origin. Valude, Terson, and Antonelli advised excision as more reliable than cauterization as a means of destruction. Berger.

Reissert (728, **Lid reflexes**) reports an upward movement of the nasal portion of the skin of the lower lid observed in several cases but most markedly in two neurasthenic patients with sound eyes. It accompanied contraction of the pupil when the shading hand was withdrawn from in front of the eye. This reflex in neurotic individuals takes the place of the complete lid closure, of which it is a partial phenomenon, incident to dazzling.

Santa-Maria (729, **Spastic blepharoptosis**) finds that blepharoptosis, which is often the only manifestation of hysteria, frequently escapes detection by ordinary tests, but may be shown by measurement of the field of fixation. In case of upward limitation, the exclusion of motility defects will allow us to infer the presence of a mild degree of spastic ptosis. Calderaro.

Skorobogatow (730, **Indication for entropion operations of Snellen, Watson-Junge, and Panas**) has done operations for entropion 906 times in 505 patients. He uses Snellen's method when the cartilage is thick, broad, and bent and after trachoma has run its course, combining a canthoplasty in case the lid fissure is much shortened. Watson-Junge's operation is performed if the cartilage is thin and but slightly curved, and in distichiasis. Panas's method is used in thin or thick cartilages, if narrow and curved, in the presence of trachoma, and in all cases of relapse following other operations. Hirschmann.

Reuchlin (731, **Case of congenital chondroma at the inner lid angle**) describes a chondroma in an infant of eight months, situated at the junction of the left nasal bone with the lateral cartilage, and which did not recur after removal. The region of the caruncle was pushed forward by an ethmoidal mucocele.

Albrecht (732, **Case of cirsoid neuroma of upper lid**) describes a typical cirsoid neuroma situated in the upper lid in lobulated unpigmented wrinkled skin. It was congenital and associated with numerous fibromata mollusca.

Charles (733, **Angioma of upper lid. Operation**) excised a small angioma in a child six months old. He was able to include the mass within a Desmarres' clamp. Two vessels supplying the tumor were ligated and the wound healed without deformity. Alling.

IX.—LACHRYMAL APPARATUS.

734. Casali, O. **Two cases of acute dacryoadenitis.** *Annal. d'ecul.*, cxxxv.; *Annal di Ottalm.*, iii., 1906.

735. Minelli, S. **Lymphomatosis of salivary and lachrymal glands.** *Virchow's Arch.*, clxxxv., p. 117.

736. Ziegler, L. **Bilateral lymphomatosis of lachrymal, parotid, and submaxillary glands due to tonsillar hypertrophy with suboxidation.** *Annals of Ophth.*, Jan., 1906.

737. Cosmettatos, G. **Some congenital anomalies of the lachrymal passages.** *Arch. f. Augenheilk.*, lv., 4, p. 362.

738. Basso, D. **Trachoma in the pathology of the lachrymal passages.** *Annal. di Ottalm.*, vii., 1906.

739. Maggi, F. **Primary neoplasms of the lachrymal sac.** *Annal. di Ottalm.*, No. 10, 1906.

Casali (734, **Two cases of acute dacryoadenitis**) reports a case in which acute dacryoadenitis accompanied the aggravation of an old blennorrhoic urethritis, and another occurring in a young woman after a long period of amenorrhœa.

Calderaro.

Minelli's (735, **Lymphomatosis of salivary and lachrymal glands**) study of a case of Mikulicz's disease showed that lymph-tissue, normally present in the follicles of the lachrymal and salivary glands, may become hyperplastic and crowd out specific glandular tissue. There is no toxic element. General lymphatic anæmia is a rare sequela.

Ziegler (736, **Bilateral lymphomatosis of lachrymal, parotid, and submaxillary glands due to tonsillar hypertrophy with suboxidation**) describes the unusual case of a girl of eighteen who had a non-inflammatory swelling of both lachrymal glands six weeks previous. The parotids were large and hard, the submaxillary glands less hard, but enormously hypertrophied. There were no other glandular enlargements. The tonsils and adenoids were enlarged. After their operative removal the other gland swellings disappeared. They are ascribed to autointoxication due to nose breathing.

Alling.

Cosmettatos (737, **Some congenital anomalies of the lachrymal passages**) reports the following anomalies of the lachrymal passages: Slit formation of the canaliculus with absence of punctum, double punctum, and canaliculus of upper lid, normal punctum with atresia of canaliculus; absence of lower punctum with stenosed canaliculus; congenital stenosis of both nasal ducts with a fine fistula leading out to the normal skin of the nose.

Basso (738, **Trachoma in the pathology of the lachrymal passages**) finds, on the basis of histological examination of thirty-three extirpated sacs, that trachoma frequently involves the lachrymal passages, most frequently as an acute process. Many of the chronic catarrhs are trachomatous. Trachoma of the sac is marked by hardness persisting after evacuation. Extirpation of the sac and nasal duct is the best form of treatment. Calderaro.

Maggi (739, **Primary neoplasms of the lachrymal sac**) describes a connective-tissue growth which had developed in the mucous membrane of the tear sac on the basis of a polyp due to chronic inflammation, as a perithelial angiosarcoma. The early diagnosis of such growths is difficult. The history of epiphora of long standing, the late development of a swelling, and the absence of discharge and inflammatory reaction in the neighboring skin, are important clinical features.

Calderaro.

X.—ORBIT AND ACCESSORY CAVITIES.

740. Bartels, M. **Anatomical basis of loss of vision in orbital phlegmon.** *Arch. f. Augenheilk.*, lvi., 3, p. 267.

741. Lieblein. **Cases of gun-shot injury. Extraction of projectile from orbit.** *Prager Med. Wochensch.*, 1906, No. 50, p. 669.

742. Calderaro. **Case of echinococcus cyst of the orbit. Operation. Recovery.** *Clin. Oculist.*, March, 1906.

743. van Duyse. **Study of primary chromatophoroma of orbit.** *Arch. d' opht.*, xxiv., p. 673.

744. Schmidt-Rimpler, H. **Rare form of encephalocele with choked disc.** *Zeitschr. f. Augenheilk.*, xvi., 5, p. 438.

745. Pribram. **Exophthalmic goitre with unilateral involvement of eyes.** *Deutsche Med. Wochensch.*, 1906, 48, p. 1978.

746. Mosse, M. **Some rare disturbances in exophthalmic goitre.** *Berl. Klin. Wochensch.*, 1907, 1, p. 14.

747. Querenghi, F. **Sympathetic ocular syndrome.** *Annal. d'Ocul.*, cxxxvi., p. 389.

748. Cirincione. **Diagnosis and treatment of exophthalmus due to ethmoidal mucocele.** *Klin. Monatsbl. f. Augenheilk.*, xliv., Supplem., p. 206.

749. Hoffmann, R. **Inflammatory affections of orbit and eyes due to accessory sinus suppuration.** *Zeitschr. f. Augenheilk.*, xvi., Supplem. p. 1.

750. Joerss, K. **Relations of some ocular affections to nasal disease. Case of orbital frontal sinus empyema.** *Med. Klinik*, 1906, No. 47, p. 1224.

751. Schmiegelow, E. **Relation between diseases of the nose and eye.** *Hospitalstid.*, 1906, p. 1101.

752. Holmes, C. **Headaches and ocular symptoms due to accessory sinus inflammation.** *Ohio State Med. Jour.*, 1906, Feb. 15.

Bartels (740, **Anatomical basis of loss of vision in orbital phlegmon**) reports a death from otitic sinus thrombosis, with double orbital phlegmon four weeks after operation. There was a brain abscess, and thrombosis of the left superficial petrosal and right cavernous sinus and of the circle of Ridley. In the orbital segment of the optic nerve there was an extensive necrosis surrounding a localized obstruction in the central artery and vein. Sudden blindness occurred during life without any changes in the retinal vessels, choked disk developing later, although chemosis of lids and exophthalmus was an early symptom.

Lieblein (741, **Cases of gun-shot injury. Extraction of projectile from orbit**) reports a case of bullet wound, an attempt at suicide by a shot through the right side of the head. Clinical and radiographic examinations showed that the bullet had lodged in the left orbit. It was removed by Kroenlein's operation, the external rectus having to

be sacrificed, and vision, of which there had been a remnant, was decidedly improved.

Calderaro (742, **Case of echinococcus cyst of the orbit. Operation. Recovery**) reports a case of echinococcus cyst of the orbit in a man of twenty-six. Exophthalmus had been present for six years, mainly down and forwards, reaching its maximum in six months and then remaining stationary and causing no disturbance except a slight diminution of sight, V=¼. Fundus normal. There was a tough elastic irreducible tumor filling the entire depth of the orbit. Aspiration confirmed the diagnosis of echinococcus, for which there were no other symptoms. The cyst was removed in toto by Kroenlein's operation with perfect result. The incision along the orbital margin is advised, and only one horizontal cut in the temple, to avoid the upper branch of the facial artery. The insertion of the temporal muscle should be loosened from the resected bone in order to avoid displacement by muscular contraction. Calderaro.

van Duyse (743, **Study of primary chromatophoroma of orbit**) describes as chromatophoromata, true melanosarcoma, containing pigment cells and developing in tissues which contain them. The assumptions that true melanosarcoma does not develop except in such tissues and that only true melanosarcoma can cause metastases are both incorrect. The case of a man of forty-seven is reported in which a chromatophoroma of the orbit was extirpated, and metastases developed in the liver, endo- and pericardium, pleura, kidneys, pancreas, and small intestine. There was probably an ectopy of pigment cells, an anomalous deposit at an early stage of development in the orbital tissues of pigment cells intended for the choroid and retina, uvea and sclerotic.

Berger.

Schmidt-Rimpler (744, **Rare form of encephalocele with choked disk**) describes a monster with encephalocele of both temporo-sphenoidal fossæ, hernia cerebri extending into the buccal cavity and behind the upper lid. The eyes protruded so that they could not be covered by the lids. There was double choked disk with vascularity increasing with pressure on the hernia cerebri.

Mosse (746, **Some rare disturbances in exophthalmic goitre**)

reports exophthalmic goitre of one year's standing in a woman of thirty-eight, with slight exophthalmus and evident Graefe's sign in the right eye. There was no affection of the sympathetic, as the pupils were equal, and the affection of the left levator, an incomplete ptosis, was due to nuclear paralysis; that of the right, to irritation, by thyroid toxins.

Ouerenghi (747, **Sympathetic ocular syndrome**) observed in a woman of fifty-five the development of slight enophthalmus, narrowing of the lid fissure, corneal opacity without ciliary injection, but with diminution of corneal and conjunctival sensibility and marked narrowing of the pupil of the affected side. A lesion of the sympathetic fibres in their course between the upper cervical ganglion and the ciliary ganglion would explain these symptoms. The corneal opacity was probably trophic. Berger.

Cirincione (748, **Diagnosis and treatment of exophthalmus due to ethmoidal mucocele**) discusses the displacement of the globe due to ethmoidal mucocele. Aspiration is an important aid to diagnosis. Exophthalmus and the other symptoms of a new growth may be simulated by a sphenoido-ethmoidal mucocele. In another case aspiration showed a large cavity filled with mucus, which was opened from in front, and a free communication with the nose established later on.

Hoffmann (749, **Inflammatory affections of orbit and eyes due to accessory sinus suppuration**) reviews the subject of inflammatory affections of the orbit following accessory sinus suppuration, and reports a number of cases. In one, there was a periostitis of the orbital roof following frontal sinus empyema which was complicated by inflammation of the superior rectus and cured without operation. An "epiperiorbital" abscess was situated at the outer upper angle, which from its location might have been mistaken for an abscess of the lachrymal gland. Ethmoid and frontal sinus empyema after scarlet fever and diphtheria was observed. A sphenoid sinus empyema was characterized by ptosis, pain on pressure, and movement of the globe, and optic neuritis, and caused disturbances of the external ocular muscles and exophthalmus by means of an orbital periostitis. Lachrymal sac affections may also be the cause of orbital disease. Accessory sinus

affections are frequent, but do not tend to spread to the orbit unless markedly infectious.

Joerss (750, **Relations of some ocular affections to nasal disease**) reports a case which at first appeared as a mucocele of the frontal sinus, with a hard shell of bone protruding into the orbit. Operation showed an opening in the bone, the frontal sinus filled with muco-pus, and a large temporal abscess leading to the zygoma. A large opening into the nose was made, but after several months of persistent suppuration and signs of maxillary sinusitis, the radical operation was performed. Hypopyon keratitis developed but was healed. It was probably due to insufficient protection of the eye, although iritic congestion and chemosis have been noted after the radical Kroenlein operation, as an expression of irritation of the orbital contents, particularly the ciliary ganglion. The muco-pus had broken through far to the temporal side. Transillumination showed a dark area over both frontal sinuses, which communicated freely and were both filled with pus. The other sinus was not opened and healed spontaneously by drainage.

Schmiegelow (751, **Headaches and ocular symptoms due to accessory sinus inflammation**) reports two cases of retrobulbar neuritis due to latent suppuration in the sphenoidal and ethmoidal sinuses. In one case, that of a boy of eleven, there was an acute onset with headache and vomiting. After several days there was disturbance of vision in the left eye. There were no subjective nasal symptoms, but rhinoscopic examination showed pus in the sphenoid, which was opened, together with the posterior ethmoidal cells. Vision then improved. In the second case, a girl of eighteen, there was an optic atrophy with varying and chronic course without signs of a precedent optic neuritis, which had involved both eyes in the course of two and one half years. There was double purulent sinusitis of sphenoid and ethmoid. Headache disappeared and vision improved after the sinuses had been opened and drained, showing that suppurative processes may be present in the accessory cavities without the patient being aware of any disturbance.

Hellgren.

XI.—CONJUNCTIVA.

753. Thaler, A. **Histology of spring catarrh.** *Zeitschr. f. Augenheilk.*, xvi., 1, p. 16.

754. Goldzieher, W. **Pathological anatomy of vernal catarrh.** *Klin. Monatsbl. f. Augenheilk.*, xliv., 1, p. 521.

755. Wirtz, R. **Conjunctivitis with peculiar secretion due to the streptococcus mucosus.** *Ibid.*, p. 383.

756. Thiess. **Prophylactic treatment of the eyes of the newly-born, after Credé.** *Deutsche med. Wochenschr.*, 1906, No. 47, p. 1935.

757. Haltenhoff, G. **Double diphtheroid conjunctivitis.** *Rev. méd. de la Suisse romande*, 1906.

758. Schieck, F. **Serum therapy in diphtheritic conjunctivitis.** *Deutsche med. Wochenschr.*, 1906, No. 47, p. 1934.

759. Dutoit, A. **Forty-two cases of ocular diphtheria.** *Korresp.-Bl. f. Schweiz. Aerzte*, 1906, No. 19, pp. 609, 620, 645.

760. Heine, L. **A neglected ocular symptom in xeroderma pigmentosum. Symmetrical pterygoid-symblepharon.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 460.

761. Adamueck, V. **Experimental local amyloid of the eyelids in rabbits.** *Centralbl. f. prakt., Augenheilk.*, xxx., 354.

762. Contino, A. **Large cyst of Krause's glands with histologic report.** *Clin. Oculist.*, July, 1906.

763. Yamaguchi, H. **Fibromyxoma of the conjunctiva.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 55.

764. Harlan, H. **Case of chronic pseudo-membranous conjunctivitis with development of ocular and pharyngeal diphtheria on the use of jequirity.** *Ophth. Record*, March, 1906.

765. Johnstone, R. **Papilloma of plica semilunaris.** *Ophth. Record*, Sept., 1906.

766. Shoemaker, J. **Parinaud's conjunctivitis.** *Amer. Journ. Ophth.*, Dec., 1906.

767. Bruns, H. **Diphtheria of the conjunctiva in the far South.** *New Orleans Med. Journ.*, July, 1906.

Thaler's (753, **Histology of spring catarrh**) specimens of the tarsus and limbus, in a case of vernal catarrh with typical symptoms and lymphoid swellings, showed no increase of the elastic fibres, but a marked metamorphosis of the fine fibrillæ of the subepithelial reticular connective tissue into a coarse system of fibres which enclosed plasma cells mainly instead of the usual lymphocytes. Besides these signs of inflammation there was evidence of degenerative changes in loss of connective-tissue cell nuclei and hyaline changes in the fibres.

Goldzieher (754, **Pathological anatomy of vernal catarrh**)

excised tissue from untreated cases of vernal catarrh for microscopical examination. The conjunctiva tarsi shows a marked increase of cells and proliferation and extension of the tarsal fibres toward the epithelium. The conjunctival epithelium grows into the spaces between these proliferations. Hyaloid changes soon take place in the newly formed fibres, and a continuous mass of hyalin cements the ends of the fibres lying immediately beneath the surface epithelium. This explains the nodular excrescences and the milky haze on the mucous membrane.

Wirtz (755, **Conjunctivitis with peculiar secretion due to the streptococcus mucosus**) reports the case of a woman of sixty-seven with trachoma scars and pannus, who developed acute catarrhal conjunctivitis with peculiar dirty-gray gummy secretion consisting of fibrin-like material and mucin. A capsulated streptococcus was cultivated from the secretion. A saprophyte similar to the streptococcus mucosus is known in sugar refineries as the cause of mucoid fermentation.

Thiess (756, **Prophylactic treatment of the eyes of the newly born, after Credé**) recommends Zweifel's treatment of the eyes of the newly born with silver acetate, which is saturated in a 1% solution. There is not only less irritation but a smaller number of cases of blennorrhœa than after the use of silver nitrate.

Haltenhoff (757, **Double diphtheroid conjunctivitis**) treated a child of nine months for bilateral diphtheroid conjunctivitis, orbital cellulitis, and corneal ulcer, following pertussis. No improvement followed the injection of diphtheria antitoxin, and double broncho-pneumonia developed. Bacteriologic examination of the conjunctivitic membranes showed streptococci and staphylococci. The former were the probable specific cause of the conjunctivitis.

Schieck (758, **Serum therapy in diphtheritic conjunctivitis**) found virulent diphtheria bacilli fifteen times in twenty-two eyes with pseudo-membranous conjunctivitis and occasional corneal ulcer. Behring's serum gave satisfactory results.

Dutoit (759, **Forty-two cases of ocular diphtheria**) considers membrane formation a pathognomonic sign of diphtheria. He made forty-two observations in 32 cases, of which 9 themselves had nasal or pharyngeal diphtheria,

while 3 others had been exposed to direct infection. Diphtheria bacilli were found in 35 cases. In 25, serum therapy was instituted: 19 resulted favorably; in 6, corneal perforation occurred.

Heine (760, **A neglected ocular symptom in xeroderma pigmentosum. Symmetrical pterygoid-symblepharon**) treated a little girl in the first stages of xeroderma pigmentosum, with spotting and smooth atrophy of the skin. There was a vascularized connective-tissue fold downward and outward from the cornea, encroaching $\frac{1}{2}$–1*mm* upon it, and extending to the lid margin. Histologic examination showed an epithelialized conjunctival fold with increase of elastic elements in partly coarse and partly delicate connective tissue. This is taken to be a typical eye symptom, a primary localization of xeroderma in the portion of the conjunctiva which is particularly exposed to light, followed by a pterygium-like formation.

Adamueck (761, **Experimental local amyloid of the eyelids in rabbits**) produced artificial amyloid of the lids in rabbits by long-continued injection of meat pepton bouillon cultures of staphylococcus. A substance was found between the cell elements which gave typical reactions with aniline dyes, but did not color with iodine or sulphuric acid. The clinic picture did not correspond to that observed in man, as abscess generally develops.

Contino (762, **Large cyst of Krause's glands with histological report**) confirms Cirincione's view that cysts of Krause's glands originate in the excretory ducts, which are obstructed near the surface and become dilated by accumulation of secretion. Calderaro.

Harlan (764, **Case of chronic pseudo-membranous conjunctivitis with development of ocular and pharyngeal diphtheria on the use of jequirity**) treated a case of monocular membranous conjunctivitis of long standing with various applications without result. The only germ found was staphylococcus aureus. After using jequirity the child developed diphtheria in the throat. Whether this was due to contagion starting from some undiscovered germs in the conjunctiva, or whether it was independent of the eye trouble, is undecided by the author.

Shoemaker (766, **Parinaud's conjunctivitis**) describes a case of Parinaud's conjunctivitis which yielded to topical applications of silver nitrate (1%). He gives references to 44 cases in literature, adding one. Most of these have occurred in France and the United States. Alling.

Bruns (767, **Diphtheria of the conjunctiva in the far South**) occasionally sees cases of conjunctivitis presenting the appearances of a mild conjunctivitis with a thin croupous membrane which on being stripped off leaves a raw bleeding surface. He generally observes the disease in early childhood and gives a good prognosis. He claims that the germs have been differentiated from allied forms such as the pseudo-diphtheria and xerosis bacillus by a reliable pathologist.

Alling.

XII.—CORNEA, SCLERA, ANTERIOR CHAMBER.

768. Sulzer, D. **Treatment of corneal opacities with physical agents.** *Annal. d'ocul.* cxxxvi., p. 349.

769. Schoeler. **Treatment of parenchymatous keratitis with galvanism.** *Med. Klinik*, 1906, No. 46, p. 1217.

770. Velhagen. **Familiary corneal degeneration.** *Deutsche med. Wochenschr.*, 1906, No. 45, p. 1819.

771. Peters, A. **Histological report of a case of corneal injury due to instrumental delivery.** *Arch. f. Augenheilk.*, lvi., 4, pp. 231, 311.

772. Inouye, M. **Antipyrin keratitis.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 30.

773. Morax. **Interstitial keratitis in trypanosomiasis.** *Soc. d'opht. de Paris*, Oct. 9, 1906.

774. Wehrli, E. **Histology of superficial punctate keratitis (Fuchs), keratitis subepithelialis (Adler).** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 224.

775. Schmidt-Rimpler. **Case of nodular keratitis.** *Muench. med. Wochenschr.*, 1907, 3, p. 140.

776. Wirths, M. **Histology of keratitis vesiculosa and bullosa.** *Zeitschr. f. Augenheilk.*, xvi., 2, p. 99.

777. Agricola, B. **Treatment of purulent diplobacillus keratitis.** *Klin. Monatsbl. f. Augenheilk.*, xliv., Supplement, p. 160.

778. Schmidt, L. **Relations of keratitis dendritica to herpes corneæ.** *In. Diss.*, Giessen, 1906.

779. Nicolai (Nymwegen). **Treatment of hypopyon keratitis with salicylate of zinc.** *Ned. Tydsch. voor Geneesk.*, 1906, ii., No. 6.

780. Rollet and Moreau. **Treatment of hypopyon keratitis by capillary drainage of anterior chamber.** *Rev. gén d'opht.*, xxv., p. 481.

781. Ovio, G. **Histo-pathological study of caustics.** *Annal. di Ottalm.*, ii., 1906.

782. Sgrosso, E. **Corneal heteroplasty for ulcus rodens.** *Arch. di Ottalm.*, Dec., 1906.

783. Zirm, E. **Successful complete keratoplasty.** *Arch. f. Ophth.*, lxiv., 3, p. 580.

784. Wicherkiewicz, B. **Simplified operation for corneal staphyloma.** *Klin. Monatsbl. f. Augenheilk.*, xliv., 3, p. 580.

785. Fruechte and Schuerenberg. **Corneal cysts.** *Ibid.*, pp. 1, 404.

786. v. Hippel, E. **Congenital defects of Descemet's membrane.** *Ibid.*, p. 1.

787. Lauber, H. **Pathogenesis of corneal papilloma.** *Zeitschr. f. Augenheilk.*, xvi., 3, p. 254.

788. Koellner, H. **Mould infections of the sclera.** *Zeitschr. f. Augenheilk.*, xvi., 5, p. 441.

789. Calderaro. **Clinical and histological study of episcleral tubercles.** *Clin. Oculist.*, June and July, 1906.

790. Plitt, W. **Minute bit of copper wire in anterior chamber, revealed by the X-ray.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 537

791. Kipp, C. **Invagination cyst of cornea and anterior chamber.** *Trans. Amer. Ophth. Soc.*, 1906.

792. Ziegler, L. **Keratitis tuberculosa relieved by tuberculin injections.** *Ibid.*

793. Chance, B. **Case of vesicular keratitis with filamentous formation of detached epithelium.** *New York Med. Jour.*, Aug. 19, 1906.

794. Visonhaler, F. **Episcleral osteoma.** *Amer. Journ. Ophth.*, Oct., 1906.

795. Callan, P. **Ulceration and destruction of cornea caused by bacillus pyocyaneus.** *Trans. Amer. Ophth. Soc.*, 1906.

796. Verhoeff, H. **Tuberculous scleritis a commonly unrecognized form of tuberculosis.** *Boston Med. and Surg. Journ.*, March 14, 1907.

Sulzer (768, **Treatment of corneal opacities with physical agents**) recommends electrolysis in superficial opacities, only, of the cornea. For deep infiltration an electric lamp is recommended. The rays are concentrated through a quartz prism, and the retina protected by contracting the pupil with eserin or pilocarpin. The cocainized eye is kept open with a speculum and exposed to the rays twenty to ninety seconds. Favorable results were also effected in congenital cataract, plus tension, and posterior synechiæ.

Berger.

Schoeler (769, **Treatment of parenchymatous keratitis**

with galvanism) galvanizes the infiltrated points of the cornea with hollow needles, one of which contains tincture of iodine, the other being amalgamized.

Velhagen (770, **Familiary corneal degeneration**) observed familiary corneal degeneration in three members, aged from fifty-two to sixty-eight years, in the form of central opacification and stippling, immediately beneath the uneven epithelium. In the older patient the epithelium had desquamated and was covered with small ulcerations, while the opacities were deep in the stroma, and surrounded by an opaque zone. The pupillary opacity had a brown hue. Some of the opacities were linear or branched, and ran radially

Peters (771, **Histological report of a case of corneal injury due to instrumental delivery**) examined a newly born child delivered by forceps applied to the after-coming head. Compression had produced a tear of Descemet's membrane, as proven by fluorescin. The tears were seen as several deep, linear striations, more or less opaque. Until death three weeks later, this persisted. Histological examination showed the membrane torn into several strips which were rolled forward and lay against the periphery of the cornea. There was a superficial hemorrhage at the macula, a small extravasate on the disk, and congestion of the nerve.

Inouye (772, **Antipyrin keratitis**) reports two cases of antipyrin poisoning after large but not excessive doses, appearing as painful, reddened swellings on the skin and mucous membranes, and as numerous small corneal infiltrates. In one case vesicles or bullæ formed on the skin and cornea.

Morax (773, **Interstitial keratitis in trypanosomiasis**) has made a careful study of corneal opacities produced by inoculation of trypanosomes into the anterior chamber of dogs (Stock), and finds conditions like interstitial keratitis, *e. g.*, corneal œdema, infiltration by mononuclear round cells, development of a deep vascular network. At the margin of the opacity numerous trypanosomes were found, those in the opaque area being degenerated. Pus deposits were found in the iris and ciliary body. Berger.

Wehrli [774, **Histology of superficial punctate keratitis (Fuchs), keratitis subepithelialis (Adler)**] examined two young girls with keratitis punctata superficialis (Fuchs, Adler).

Histological examination of corneal scrapings showed that there was lymph cell immigration into the deeper epithelial layers, with formation of small cell heaps, lesions of the epithelial cells, and slight involvement of the superficial layers of the stroma. The scraping produced a rapid cure of a previously stubborn condition.

Schmidt-Rimpler's (775, **Case of nodular keratitis**) patient, a man of fifty-three, had had pain and visual disturbance since he was forty. There was a large central corneal opacity leaving an apparently clear ring only *2mm* wide, and this too under the loupe showed small punctate deposits. Fluorescin produced a green discoloration in the depth at the periphery, indicating a local defect of the endothelium of Descemet's membrane.

Wirths (776, **Histology of keratitis vesiculosa and bullosa**) studied vesicular and bullous keratitis in glaucomatous eyes. The corneæ showed œdema, principally of the epithelial layers, but occasionally in the stroma. The development of vesicles is ascribed to pressure by the œdema fluid, and cell degeneration adds to the extent of this process. In the latter case there is vascularization and foci of proliferation. Both forms depend on the length of duration of the glaucoma and are purely degenerative processes.

Agripola (777, **Treatment of purulent diplobacillus keratitis**) cites 22 cases of purulent diplobacillary keratitis to prove the therapeutic importance of accurately determining the specific micro-organism concerned. Simple catarrhal marginal ulceration and phylctenulæ in diplobacillus conjunctivitis were excluded. The severity of purulent keratitis may range from slight irritation to the severest septic infection with chemosis and iritis and deep perforative ulceration, requiring cauterization and paracentesis. There are no differential diagnostic signs to be relied upon, as the typical picture of ulcus serpens may be presented. Conjunctiva and tear sac are frequently not involved. Zinc sulphate was effective in even the severest cases.

Schmidt (778, **Relations of keratitis dendritica to herpes corneæ**) discusses 51 cases of dendritic keratitis and herpes of the cornea. Influenza and allied catarrhal conditions played an etiological rôle in more than half of the cases.

Injuries, foreign bodies, dust, etc., may also be a cause, and scrofula predisposes, as do previous attacks of ocular disease of any kind, to herpetic affections. Relapses and recurrences were frequent. Among the complications were trigeminal neuralgia, deep corneal opacities, iritis, and hypopyon. The dendritic form was most frequent; the formation of small vesicles rupturing without progressive ulceration being seen in 10%. The cases with neuralgic pain show that there is no sharp dividing line between febrile and neuralgic herpes. Involvement of both eyes is extremely rare. The average age was thirty-five, and ¾ of the patients were males. The spring months show the greatest number of cases.

Nicolai (779, **Treatment of hypopyon keratitis with salicylate of zinc**) found that pneumococci are extremely sensitive to zinc salicylate, which he used in 8 cases of hypopyon keratitis due to this germ with good effect. Progress of ulceration was checked, and paracentesis was not required in a single case. Jitta.

Rollet and Moreau (780, **Treatment of hypopyon keratitis by capillary drainage of anterior chamber**) recommend drainage of the anterior chamber in hypopyon keratitis with much pus. Puncture and counterpuncture are made in the lower part of the cornea and a thread of sterile floss silk passed through, which is allowed to remain for from twenty-four to forty-eight hours. A binocular bandage is applied and changed daily. Good results were obtained in seventeen cases reported. Berger.

Ovio (781, **Histo-pathological study of caustics**) produced experimental corneal ulcers by inoculation with various pathogenic germs and then used the actual cautery. Histologic and bacteriologic examination of these tissues and of control corneæ showed that the cauterization has a direct and beneficial action on the process of healing, as shown by the form, number, and arrangement of the infiltrating elements. Calderaro.

Sgrosso (782, **Corneal heteroplasty for ulcus rodens**) reports a case of ulcus rodens of the cornea in which complete removal of the affected area to beyond the undermined margin and transplantation of a piece of rabbit's cornea was successful. Calderaro.

Zirm (783, **Successful complete keratoplasty**) reports a success, under observation eight months, of one case, out of a number, of total keratoplasty. The corneæ had been lost six months previously by lime burn. Pieces measuring 5*mm* were exsected and replaced by the cornea from an eye freshly enucleated for injury. A bridge of conjunctival tissue, or crossed sutures, were used for immobilization. The flap remained perfectly clear, as it had only been touched with the trepan and had been kept at body temperature, fitted perfectly into the defect and lay flush with the corneal surface. It was taken from the comparatively sound cornea of a young person and was transplanted into a partially vascularized but not suppurating or indurated cornea. In case of absence of vascularization, the latter could be supplied by transplanting a conjunctival flap.

Wicherkiewicz (784, **Simplified operation for corneal staphyloma**) performed iridectomy in a child of six months with adherent leucoma and increased tension. The leucoma became staphylomatous. Puncture caused its wall to collapse in folds after the aqueous drained off, and the excision of an elliptical piece was followed by such perfect coaptation that no sutures were required. The globe had the same size as its fellow. For this procedure, the wall of the staphyloma must not be too thick and must not be adherent to the lens capsule, as then the aqueous cannot flow off freely.

Fruechte and Schuerenberg (785, **Corneal cysts**) treated a woman who had been stuck in the eye with a pitchfork six years previously. There was a cystoid scar in the place of the cornea which had to be removed with the anterior half of the sclera, appearing as a structure with three completely separated cysts, probably originating in exudation from the ciliary body.

v. Hippel (786, **Congenital defects of Descemet's membrane**) opposes Peters' views as to the pathogenesis of congenital defects of Descemet's membrane as an arrest of development at an early embryological period. The condition is due to an active disease process which takes place in a fully developed eye during the last months of fœtal life.

Lauber (787, **Pathogenesis of corneal papilloma**) reports 3 cases of papilloma of the cornea. He finds it natural that

these vascular tumors should have some spatial connection with a vascular tissue, the conjunctiva. In spite of this they are strictly corneal tumors. Vessel formations which have not been produced by previous or still persisting inflammatory or traumatic processes may be of importance in the development of papilloma, which can not occur without them.

Koellner (788, **Mould infections of the sclera**) reports a progressive mycosis of the sclera in a man who had a small conjunctival tear due to injury with a piece of wood. A yellowish white spot appeared on the conjunctiva and the underlying sclera became necrotic, being cast off as a sequestrum. Histologic examination revealed aspergillus. There was a small corneal ulcer and the pupil was completely occluded, causing increased tension. Experimental inoculations of the aspergillus into a rabbit's sclera were unsuccessful.

Calderaro (789, **Clinical and histological study of episcleral tubercles**) saw a boy of seven, of "lymphatic" constitution, with an episcleral nodule the size of a lentil, hard, smooth, and of pink color. Excision was followed by relapse with perforation of the sclera, prolapse of iris, cicatrization, and final healing. The nodule was found to be tuberculous. In the case of a girl of seventeen with phthisical habitus and tuberculous family history, there was an excrescence the size of a pea at the upper episcleral region. The base was broad, the centre exulcerated. There was no pain. Inoculation tests were positive. Scraping and cauterization were followed by healing. A boy of thirteen showed an elastic, painless, soft growth broadly sessile on the sclera. Hyphæma and opacity of the media developed later. There being no other constitutional disturbance, the eye was enucleated as a prophylactic measure. Histologic and experimental tests proved episcleral tuberculosis. The nodules represent a local tuberculosis of exogenous source which destroys the sclera without involving the uvea or other tissues of the eye. Prognosis is relatively good, as spontaneous cure is the rule, even with a general predisposition to tuberculosis. Treatment should be expectant and enucleation is contra-indicated.

Plitt (790, **Minute bit of copper wire in anterior chamber revealed by the X-ray**) detected with the X-ray a bit of copper $\frac{1}{4}mm$ wide, $1mm$ long, and $0.1mm$ thick. There was ample

clinical evidence of the presence of a foreign body in the anterior chamber at the iris angle.

The eye enucleated by KIPP (791, **Invagination cyst of cornea and anterior chamber**) was injured twenty-five years before by a perforating wound of the cornea, and he explains the cyst by supposing that the corneal epithelium healed into the deeper parts of the wound and then proliferated. Later, after filling part of the anterior chamber, the central cells liquefied and formed the cyst. ALLING.

The revival of the treatment of tuberculosis by tuberculin is exemplified by the paper of ZIEGLER (792, **Keratitis tuberculosa relieved by tuberculin injections**), who believes it of value in tuberculosis of the eye for diagnosis and for therapeusis. His case was one of probable tuberculosis of the cornea in the form of an interstitial keratitis with deposits on Descemet's membrane and nodules on the iris. There was local and general reaction to tuberculin and progressive improvement in the eye. ALLING.

CHANCE'S (793, **Case of vesicular keratitis with filamentous formation of detached epithelium**) patient, giving an uncertain history of traumatism, presented a cornea almost entirely denuded of epithelium. Later there appeared numerous vesicles scattered irregularly over the cornea. These in bursting formed flakes of exfoliated membrane hanging in shreds. The cornea was anæsthetic. The ultimate result was satisfactory restoration of the corneal epithelium. The case seemed to be a neuropathic disease of the cornea accompanying a lithæmic or rheumatic diathesis. ALLING.

VISONHALER (794, **Episcleral osteoma**) excised a tumor which was imbedded in the sclera and proved to be a bony growth irregularly oval and facetted at the point of contact with the sclera. It was surrounded by a fibrous capsule. Of the 30 odd reported cases this one is the oldest—the patient being fifty. The origin was undoubtedly in congenitally misplaced osteoblasts. ALLING.

CALLAN'S (795, **Ulceration and destruction of cornea caused by bacillus pyocyaneus**) patient lost the entire cornea by ulceration starting in an abrasion from a foreign body. The bacillus pyocyaneus is seldom found in eye inflammations and seems to be especially destructive. ALLING.

Verhoeff (796, **Tuberculous scleritis a commonly unrecognized form of tuberculosis**) believes that most cases of scleritis are tuberculous, supporting this opinion by study of thirteen cases. In only three of these did he find evidence of the disease elsewhere. All of them presented the nodular form. He further calls attention to the frequent occurrence of additional small elevations of one or more *mm* in diameter in the vicinity of the principal lesion. These latter show a tendency to quickly disappear and return again. No tubercle bacilli were found nor was there caseation, but otherwise the lesions showed the characteristics of tuberculous tissue. He used Koch's old tuberculin and obtained reaction and improvement. Alling.

Sections XIII.–XVIII. Reviewed by Staff-Surgeon Dr. NICOLAI, Berlin.

XIII.—LENS.

797. Hikida (Japan). **Effect of hardening and death on the lens.** *Arch. f. Augenheilk.*, lvi., 4, p. 342.

798. Tonfescu. **Nature of degeneration of lens fibres.** *Annal. d'Ocul.*, cxxxv., p. 265.

799. Fuchs. **Etiology of cataract.** *Arch. f. Augenheilk.*, lvi., 1, p. 93.

800. Knapp, H. **Etiology of zonular cataract.** *Ibid.*, 4, p. 383.

801. Patry, A. **Histology and etiology of posterior lenticonus.** *In. Diss.*, Geneva, 1906.

802. Fruechte, W. **Epithelial implantations in the lens.** *Klin. Monatsbl. f. Augenheilk.*, xlv., 2, p. 246.

803. Cramer, E. **Causation and clinical characteristics of glass-blowers' cataract.** *Ibid.*, p. 47.

804. Speciale-Cirincione. **Microscopy and spectroscopy of cataracta nigra.** *Arch. f. Augenheilk.*, xlv., 1, p. 68.

805. Roemer. **Sero-pathology and the pathogenesis of senile cataract.** *Ibid.*, lvi., Supplement., p. 150.

806. Peters, A. **Pathology of the lens.** *Lubarsch-Ostertag Pathologie*, etc., Supplement, vol. x., No. 1.

807. Frenkel, H., and Garipuy, E. **Arterial tension in cataract.** *Arch. d'opht.*, xxvii., p. 615.

808. Pflugk. **Treatment of incipient senile cataract with injections of potassium iodide.** *Klin. Monatsbl., f. Augenheilk.*, xliv., 2, p. 2400.

809. v. Heuss. **Spontaneous rupture of the posterior capsule after**

double perforation by a chip of steel. *v. Graefe's Arch.*, lxv., 1, p. 46

810. Cantonnet. A. **Secondary migration of the lens after subconjunctival dislocation.** *Arch. d'opht.*, xxvi., p, 761.

811. Hirschberg, J., and Fehr, O. **Ophthalmoscopic pictures.** *Centralbl. f. prakt. Augenh.*, xxx., p. 198.

812. Hirschberg. **The oldest picture of cataract operation.** *Berl. Ophth. Soc.*, 15, p. 11, 1906.

Hikida (797, **Effect of hardening and death on the lens**) studies the effect of hardening methods and post-mortem changes on the shape, split-formation, epithelial changes, and nuclear shrinkage, in the lens, and was able to confirm Peters's theory that some forms of cataract are due to nuclear sclerosis, which may at times be secondary to lesion of the capsular epithelium.

Tonfescu (798, **Nature of degeneration of lens fibres**) found on examination of senile cataracts a fatty degeneration of the lens fibres which had been noted by Ch. Robin. The changes are generally first seen at the equator.

Fuchs (799, **Etiology of cataract**) reviews his findings of heterochromia with opacities of Descemet's membrane and cataract in the lighter, blue, eye. The combination of dark hair and blue eyes seems to predispose to cyclitis and the development of lenticular opacities.

Knapp (800, **Etiology of zonular cataract**) describes a case of zonular cataract and discusses the possibility of nutritional disturbances as a factor in the etiology. In his case there was a neuro-retinitis and uveitis. Dots and striæ appeared in the periphery of the lens, growing larger and coalescing, so that finally a zonular cataract resulted. Examination of the fundus may give a clue to the etiology in these cases.

Patry (801, **Histology and etiology of posterior lenticonus**) discusses 15 cases of posterior lenticonus, previously reported, of which 2 were in human beings. Lens changes are usually present, and the posterior capsule may be thinned or ruptured. The shape may be that of lentiglobus. Traction by the hyaloid artery is a more probable cause than increased volume of the lens.

Fruechte (802, **Epithelial implantations in the lens**) examined an eye enucleated after severe bruise, and found a

pearly cystic tumor of the lens. It had developed around epithelial particles which had been implanted in the lens. Such cysts are at times found in the iris, but the mechanical conditions are rarely such as to allow an implantation in the lens. The cases of Elschnig, Hess, and Broxner are not analogous.

Cramer (803, **Causation and clinical characteristics of glass-blowers' cataract**) discusses the etiology of glassblowers' cataract, which has been attributed to excessive loss of fluid by evaporation (Meyhoefer), action of heat and light (Hirschberg, Arlt), venous stasis in blowing (Peters), and evaporation on the surface of the cornea (Leber). He concludes that it is due to continued exposure to chemical rays, particularly ultraviolet, from the admixture of chalk and clay, in the glowing mass. Instead of red glasses a protective water chamber should be used and the fluid colored with fuchsin to arrest the chemical rays.

Speciale-Cirincione (804, **Microscopy and spectroscopy of cataracta nigra**) made histologic, spectroscopic, and chemical study of two black cataracts of a patient. There was no special pigment. The dark color is due to sclerosis of the fibres which reflect very little light, and the result is purely optical. Cataracta nigra is not to be confounded with traumatic or hemorrhagic opacity, as the media are clear and the fundus generally normal, so that a favorable prognosis is offered for operation.

Roemer (805, Discusses the physiological variations of osmotic pressure in the intraocular fluids in their relation to that of the serum of the blood, and agrees with Nuel that they are about equal. The lens is generally in osmotic equilibrium with surrounding fluids, which may be disturbed by lesion of the capsular epithelium. Senile cataract is the result of action complicated by cytotoxins. Saponin, fat-dissolving substances, chloroform, carbolic acid, and acetone are specific poisons for the lens, which, post-mortem, shows a loosening of the capsule, imbibition of fluid, and exosmosis of albumin. In senile cataract there is undoubtedly a relation to the other regressive metamorphoses of the aging organism. Disturbance of some regulatory mechanism or

secretion, cytotoxic action, changes in the serum or in the specific anti-bodies of the lens, may play a rôle.

Peters (806, **Pathology of the lens**) discusses the pathology of the crystalline lens system, and reviews the entire literature since 1900. Nuclear sclerosis is frequently primary, causing a detachment of the capsule and then cataract. Nutrition of the lens takes place by endosmosis. The capsular epithelium has a protective action against the aqueous like that of Descemet's membrane, but the posterior capsule without any epithelium seems to keep out the vitreous. Wessely believes that the lens is nourished by diffusion, and that the capsule is semi-permeable. Roemer considers the protoplasm of the lens capable of assimilating nutritive substances. Fat-soluble substances can penetrate the capsular epithelium (A. Leber). The nuclear reflexes of Hess are due to sclerosis of age. Congenital anomalies include anterior and posterior lenticonus, and coloboma, and various forms of cataract which are described in detail, as are traumatic and chemical cataract, entozoa, and dislocations.

Frenkel and Garipuy (807, **Arterial tension and cataract**) found increased arterial tension in senile cataract in 9% of 108 cases, which seems to act indirectly through constitutional disturbances. Age has no direct influence on arterial hypertension, and arteriosclerosis is not a factor in the clinical picture of senile cataract, although it must be taken into consideration in operations, and relieved by diet, purgatives, iodides, and so on.

v. Pflugk (808, **Treatment of incipient senile cataract with injections of potassium iodide**) used subconjunctival injections of a 2% saline solution of iodide of potash in incipient senile cataract with good results as to clearing of the opacities and improvement of vision. The treatment is combined with dionin and kept up for four weeks. Rest and a bandage are required after injection.

v. Heuss (809, **Spontaneous rupture of the posterior capsule after double perforation by a chip of steel**) observed a case of spontaneous rupture of the posterior lens capsule following injury with a chip of steel. Bacteria were found in the eye. Their chemotactic action had attracted leucocytes, which

had produced histolytic softening and, finally, perforation of the capsule.

Cantonnet (810, **Secondary migration of the lens after subconjunctival dislocation**) reviews 85 cases of migration of the lens after subconjunctival dislocation. The movement was generally upward (53) or inward (15). The lens generally enters the conjunctival sac secondarily, especially if the capsule is intact or there is marked chemosis. Predisposing factors are marked concussion, pressure on the globe, squeezing of the lids, and similar mechanical complications of the original injury.

Hirschberg and Fehr (811, **Ophthalmoscopic pictures**) report an irregular tear of sclera and cornea due to injury by a breaking eye-glass. The whole iris had been torn out, so that the fibres of the zonule and the ciliary processes could be seen. Vision was $\frac{5}{10}$ with correction. Field normal.

Hirschberg (812, **The oldest picture of cataract operation**) looked up the oldest pictorial representation of cataract extraction in medical works. Bartisch (1583), an oculist in Dresden, appears to have been the first to represent extraction. He penetrated the sclera *3mm* from the limbus with a needle, at the temporal side. The paintings of Rembrandt, and of Malatesta are also described.

XIV.—IRIS.

813. Lauber, H. **Histology of heterochromia in deaf albino cats.** *Zeitschr. f. Augenheilk.*, xvi., 4, p. 326.

814. Gallenga. **Study of ectropion uveæ.** *Arch. di Ottalm.*, xii., 9–12.

815. Albrand, W. **Variations in pupillary size and equality in insanity.** *Wiener klin. Rundschau*, 1906, 1907.

816. Caspar. **Unilateral reflex pupillary paralysis.** *Arch. f. Augenheilk.*, liv., 1, p. 53.

817. Axenfeld, T. **Traumatic reflex pupillary paralysis.** *Deutsche med. Wochenschr.*, 1906, No. 17.

818. Schanz. **Metastatic iritis following furuncle.** *Zeitschr. f. Augenheilk.*, xvi., Supplem., p. 58.

819. Chaillous, J. **Traumatic infection of the globe by a spore-bearing bacillus.** *Soc. d'opht. de Paris*, Nov. 6, 1906.

820. Caspar, L. **Melanosarcoma of the ciliary body.** *Centralbl. f. prakt. Augenheilk.*, xxx., p. 258.

821. Oeller, F. **Intra-epithelial iris cyst.** *Festschr. f. F. Rosenthal*, Leipzig, 1906.

822. Pechin. **Peculiar type of uveal tuberculosis.** *Arch. d'opht.*, 1906, p. 407.

823. Schleich, G. **Primary tuberculous affections of the uveal tract.** *Deutsche med. Wochenschr.*, 1906, p. 38.

Lauber (813, **Histology of heterochromia in deaf albino cats**) examined the eyes of two cats with one brown and one blue eye, each. The condition represented partial albinism, halfway between the normal brown eye and complete albinism. Heterochromia may also be due to unilateral disease and follow pathological changes in one eye.

Gallenga (814, **Study of ectropion uveæ**) reports case histories and histological findings in ectropion uveæ. Obliteration of lymph spaces and infolding of the sphincter and pupillary margin were invariably found. The cause is a proliferation of cells in the pars iridica retinæ with shrinkage of the organized exudate and atrophy of iris tissue.

Albrand (815, **Variations in pupillary size and equality in insanity**) found the pupil in progressive paralysis and in epilepsy characterized, at times, by marked variability from day to day or even from hour to hour while again there would be uniform conditions for long periods.

Caspar (816, **Unilateral reflex pupillary paralysis**) observed reflex pupillary paralysis in 7 out of 26,000 patients. One was undoubtedly, 5 probably tabetic, and 1 due to possible paresis. In the other cases there were no local or general lesions to explain the condition.

Axenfeld (817, **Traumatic reflex pupillary paralysis**) reports reflex pupillary paralysis in cranial injuries, bruising of the optic nerve, and contusion of the globe.

Schanz (818, **Metastatic iritis following furuncle**) reports purulent metastasis in the iris following abscess of the deep fascia of the neck due to furuncle. The pus deposit finally discharged into the anterior chamber, which was opened, evacuated, and washed out with a solution of collargyrum. Pure culture of staphylococcus aureus was found in the abscess and in the pus from the anterior chamber. The complication reported is very rare considering the frequency of furuncle of the neck.

Chaillous (819, **Traumatic infection of the globe by a spore-bearing bacillus**) found in a case of traumatic infectious

irido-cyclitis, with detachment, a sporulating bacillus related to B. subtilis, producing purulent hyalitis on inoculation into rabbits' eyes.

Caspar (820, **Melanosarcoma of the ciliary body**) reports a slowly developing melanosarcoma which had been noticed by the patient, twenty-three years before, at the iris angle. Large masses were seen behind the lens protruding into the vitreous from the ciliary body. For five years there was steady but slow advance. In spite of development of cataract and irregular pupil, operation was refused.

Oeller (821, **Intra-epithelial iris cyst**) saw detachment with blindness in a young woman of twenty. Later on the eye had to be enucleated for secondary glaucoma with marked inflammatory symptoms, and pupillary occlusion. Microscopic examination revealed a cystic cavity behind the iris reaching from the pupillary margin to the root of the iris. This had pressed the iris forward and thus caused the increased tension. In the diagnosis the narrow interior chamber and the condition of the anterior surface of the iris are important aids.

Pechin (822, **Peculiar type of uveal tuberculosis**) saw a woman of twenty-six with tuberculous uveitis characterized by yellowish guttate deposits on Descemet's membrane. The patient was in bad general condition and had some affection of the apices of the lungs. Her mother had died of phthisis. In a second case, injury was the starting-point of the disease.

Schleich (823, **Primary tuberculous affections of the uveal tract**) claims that prognosis and therapy of primary affections of the uveal tract depend mainly on the etiology, which must be carefully determined. Tuberculosis is a frequent factor, especially in the clinics of Freiburg, Tuebingen, and Wuerzburg. Diagnosis is often attended with great difficulties. Disregarding ciliary tuberculosis, the disease may present as disseminate nodular tuberculosis of the uveal tract, true formation of tubercle, and simple inflammation on a tuberculous basis without specific tissue changes. Prognosis is always grave, particularly in the second group, both as to sight and life. Relapses are frequent in all forms, although some are decidedly improved by treatment.

XV.—CHOROID.

824. Hirschberg, J., and Fehr. O. **Ophthalmoscopic pictures.** *Centralbl. f. prakt. Augenheilk.*, xxx., p. 289.

825. Chaillous and Polack. **Bilateral retinal detachment remaining cured after ten years. Choroiditis disseminata.** *Soc. d'opht. de Paris*, 3, p. 7, 1906.

826. Stocke, E. **Violent neuro-retinitis with choroidal changes.** *Belg. opht. Gesellsch.*, April 20, 1906.

827. Van der Hoeve, J. **Chorio-retinitis in man due to naphthalin.** *Arch. für Augenheilk.*, lvi., 3, p. 259.

828. Schieck, F. **Melanosarcoma as the only form of uveal sarcoma.** Wiesbaden, 1906.

829. Santucci, S. **Contribution to ocular tuberculosis.** *Annal. di Ottalm.*, 1, 1906.

830. Kroener, F. **Acute pigment change of retina in rupture of choroid.** *Arch. f. Augenheilk.*, lvi., 1, p. 1.

Hirschberg and Fehr (824, **Ophthalmoscopic pictures**) examined a young woman with myopic fundus changes in 1888. V. O. D. = fingers at 6 in.; V. O. S. = $\frac{6}{60}$ with sph. − 7 D. In 1905 advance of the pigment changes was noted, but vision was, if anything, slightly better, showing that visual tests, not ophthalmoscopic changes, determine the prognosis. In another case of luetic chorio-retinitis developing one year after initial lesion, energetic treatment with mercury brought about a cure. Eighteen years later the patient came back totally blind. The retinal vessels were thin as threads, and there was angiosclerosis of the choroid with many small pigment deposits. It was still possible to improve the condition by inunctions, as shown by final V. O. D. = $\frac{6}{36}$, and V. O. S. = F. 20*cm*, showing that lues is a chronic affection in which even late relapses are amenable to energetic treatment.

Chaillous and Polack (825, **Bilateral retinal detachment remaining cured after ten years**) report cure of retinal detachment by scleral puncture. A single operation was sufficient in one eye, but it had to be done seven times in the other. Later on pigment accumulations and disseminate choroiditis were found. There was no evident disturbance of retinal function.

Stocke (826, **Violent neuro-retinitis with choroidal changes**) treated a woman of thirty-eight with severe neuro-retinitis and old and fresh choroidal lesions suggesting specific disease.

Under inunctions, large doses of iodides, sweat baths, subconjunctival injections of $\frac{1}{5000}$ cyanide of mercury, and regulation of diet, the fundus became normal, and after six weeks V. $= \frac{5}{5}$.

VAN DER HOEVE (827, **Chorio-retinitis in man due to naphthalin**) saw a workman who had had naphthalin splashed into his left eye. There were marked diminution of vision, concentric contraction of the field, and old and recent inflammatory foci in the retina with one large white crystalline patch. In another case there was incipient cataract.

SCHIECK (828, **Melanosarcoma as the only form of uveal sarcoma**) believes that there is only one form of choroidal sarcoma, the melanosarcoma, which may give the impression of various types, according to the different stages of development of the pigmented stroma cells, involvement of vessels, character of pigmentation, and accompanying destructive and degenerative changes. Unity of interpretation would simplify and reconcile the diverse theories of uveal tumors.

SANTUCCI'S (829, **Contribution to ocular tuberculosis**) histological study of ocular tuberculosis shows that it affects the posterior segment of the globe principally, and has a predilection for the choroid, from which it spreads to the front of the eye by means of the nutrient channels. In cases of infection passing from within outward, the invasion is almost invariably found at the filtration angle. Retinal involvement is always limited to the disk and the macular region.

KROENER (830, **Acute pigment change of retina in rupture of choroid**) reports a case of contusion of the globe causing rupture of the choroid and fresh pigment-proliferation. The pigment disappeared later on, so that it could not have been of inflammatory origin. The case shed light on the mechanics of choroidal tears, and was interesting from the medico-legal aspect of possible suit for damages.

XVI.—VITREOUS.

831. SCHIRMER. **Prognosis of traumatic abscess of the vitreous.** *Arch. f. Augenheilk.*, lvi., 1, p. 107.

832. POSSEK, R. **Normal and immune cytotoxins of the vitreous.** *Klin. Monatsschr. f. Augenheilk.*, xliv., ii., p. 500.

SCHIRMER (831, **Prognosis of traumatic abscess of the vitreous**)

uses large doses of mercury in infected eyes and was able to cure abscess of the vitreous in 52% of 50 cases. Sympathetic inflammation was not observed in a single case either during treatment or up to three months after, so that the method is not only curative but preventive.

Possek (832, **Normal and immune cytotoxins of the vitreous**) studied experimentally the influence of the normal vitreous on cultures of bacteria. The bacteriotrophic components of the serum are not found, so that in a sterile condition the vitreous is a poor culture-medium. Under normal conditions of intraocular secretion there are no cytotoxins present in the vitreous of even highly immunized animals.

XVII.—GLAUCOMA.

833. Casali, A. **Pathology of hemorrhagic glaucoma and retro-choroidal hemorrhage**. *Klin. Monatsbl. f. Augenheilk., Annal. di Ottalm.*, xxxv., p. 414.

834. Czermak, W. **Development and course of attacks in prodromal and acute glaucoma.** *Prag. med. Wochenschr.*, 97, S. 1.

835. Sonder. **Emotional glaucoma.** *Arch. d'opht.*, xxvii., p. 567.

836. Speciale-Cirincione. **Primary glaucoma due to occlusion of pupil by the lens.** *La Clin. Oculist.*, 1905, p. 1985.

837. Schleich. **Prognosis and treatment of glaucoma simplex.** 78 *Vers. deutsch. Naturforscher. u. Aerzte*, Stuttgart, 1906.

838. Hirschberg, J. **Congenital hypertension permanently cured by iridectomy.** *Centralbl. f. prakt. Augenheilk.*, xxx., p. 203.

839. Holth. **New principle in operative treatment of glaucoma.** *Arch. f. Augenheilk.*, lvi., p. 93.

840. Czermak, W. **Technique of iridectomy for glaucoma.** *Prag. med. Wochenschr.*, 1906, No. 24.

841. Vollert. **New principle of operation in glaucoma (iridencleisis anti-glaucomatosa).** *Muench. med. Wochenschr.*, 1906, No. 50.

842. Lagrange, F. **Iridectomy combined with sclerotomy in chronic glaucoma.** *Arch. d'opht.*, xxvii., p. 481.

843. Carlotti. **Congenital hydrophthalmus without excavation, and with good vision.** *Soc. d'opht. de Paris.* Nov. 6, 1906.

844. Villemonte. **Resection of the external nasal nerve.** *Rec. d'opht.*, xxviii., p. 515.

Casali's (833, **Pathology of hemorrhagic glaucoma and retro-choroidal hemorrhage**) histological examination of a globe enucleated for hemorrhagic glaucoma revealed a fresh effusion of blood in the supra-choroidal space coming from

an anterior ciliary artery which had ruptured where it perforated the sclera, and he believes that it was caused by a sclerotomy performed several days before the enucleation.

Czermak (834, **Development and course of attacks in prodromal and acute glaucoma**) believes that the shallowing of the anterior chamber in glaucoma is mainly due to swelling of the generally hypermetropic lens and of the ciliary processes, which also secrete less aqueous, probably on account of senile changes in their tissue. The apposition of the iris is mechanical, not inflammatory, and reaches only to the margin of Descemet's membrane. Hence the increase of tension when the iris root is thickened in mydriasis. Pressure on sensory nerves, venous stasis, arterial hyperæmia are the results and concomitant factors in the acute and painful attacks, and accordingly relieved by meiotics or by operative treatment.

Sonder (835, **Emotional glaucoma**) discusses the history of emotional glaucoma, its relations to irritability and disease of the nervous system, and rôle in the causation of a glaucomatous predisposition. Sorrow, pain, exhaustion, loss of sleep, terror, fear of operation, are probably not the exciting but the occasional cause acting through the general circulation and intraocular secretion. A predisposed eye will react more easily to these influences as it will when the pupil is dilated.

Speciale-Cirincione (836, **Primary glaucoma due to occlusion of pupil by the lens**) reports a case of glaucoma in a woman of forty-five, which could not be relieved by eserin and paracentesis of the anterior chamber. When the iris was grasped with forceps preparatory to exsection, fluid escaped and tension was immediately reduced. There was probably an œdema of the vitreous, pressing the lens forward and thus obstructing the filtration angle.

Schleich (837, **Prognosis and treatment of glaucoma simplex**) has studied the statistics of operations for simple glaucoma, and concludes that this form of treatment does not give as good results as the continued and careful use of meiotics; 30% of operated cases had immediate deterioration of vision, and of these, 26% became blind, while in 39% treated with meiotics there was cessation of the disease.

Hirschberg (838, **Congenital hypertension permanently**

cured by iridectomy) performed iridectomy in a child with congenital hydrophthalmus and milky bilateral corneal opacities. The latter became noticeably smaller and less dense. At the age of thirteen vision was found to be: O D = $\frac{4}{60}$; O S = $\frac{3}{60}$. Tension normal, and the eye free from irritation. There was hardly any trace of the corneal opacity.

Holth (839, **New principle in operative treatment of glaucoma**) after experiments on rabbits devised a subconjunctival incarceration of the iris to assure the formation of a cystoid scar in glaucoma, with its well-known good results. In 35 out of 41 cases tension was permanently reduced to normal without any complication but a slight irritation of the iris during the first week. A fistulous communication is established between the intraocular channels and those of the conjunctiva, which allows rapid equalization of tension.

Czermak (840, **Technique of iridectomy for glaucoma**) has modified the technique of iridectomy to insure complete separation and exsection of the root in cases of adhesion or atrophy. The conjunctiva is incised at the corneal margin, the point of a knife introduced 1*mm* from the limbus and carried diagonally through the layers until the interior chamber is entered. The ends of the section are then prolonged with scissors. The root of the iris can be easily reached. In case of atrophy and adhesion, Heine's cyclo-dialysis is combined with iridectomy.

Vollert [841, **New principle of operation in glaucoma (iridencleisis anticomatosa)**] recommends Holth's procedure of incarcerating the iris to produce a subconjunctival fistula in glaucoma. The section must be made at some distance from the limbus to avoid possible infection of the incision. 41 cases were operated on with better results than are usually obtained with iridectomy.

Lagrange (842, **Iridectomy combined with sclerotomy in chronic glaucoma**) describes iridectomy combined with sclerotomy and the production of a cystoid scar which is recommended particularly for chronic glaucoma. In two cases the result was especially striking, as there was constant pain in a blind eye in one, and in the other iridectomy had been a failure.

Carlotti (843, **Congenital hydrophthalmus without ex-**

cavation, and with good vision) reports the case of bilateral hydrophthalmus, good vision, and normal disks in a man of twenty-six. There was a juvenile gerontoxon, iridodonesis, pupillary ectopy upward and inward, and circumscribed lenticular opacities. Three of the patient's family have similar ocular anomalies.

Villemonte (844, **Resection of the external nasal nerve**) reports 8 cases of successful resection of the external nasal nerve (Badal). The procedure is recommended especially for chronic or secondary glaucoma, and gives goood results in kerato-iritis.

XVIII.—SYMPATHETIC OPHTHALMIA.

845. Roemer, P. **Studies in sympathetic ophthalmia.** *Arch. f. Augenheilk.*, xliv., 1, p. 9.

846. Widmark, J. **Etiology of sympathetic inflammation.** *Hygeia*, 1906, p. 1217; No. 2, p. 161.

Roemer (845, **Studies in sympathetic ophthalmia**) believes that protozoa may play a rôle in sympathetic irido-cyclitis, in accordance with the old migration theory. Experiments with trypanosomes showed that they must enter the general circulation in order to reach the uveal tract of the other eye by metastasis. Sympathetic ophthalmia seems to depend on an infection which is pathogenic for the eye but not for the rest of the organism. The examination of fresh eyes and a careful study of all the post-mortem findings, particularly of the blood, is essential.

Widmark (846, **Etiology of sympathetic inflammation**) discusses the history of the etiology of sympathetic ophthalmia which, it appears, is more common in Sweden than anywhere else (18% of all inmates of blind asylums in 1905). Active industrial development in a sparsely populated country, where early treatment is the exception, explains the prevalence of this affection.

Sections XIX.–XXII. Reviewed by Dr. H. MEYER, Brandenburg.

XIX.—RETINA AND FUNCTIONAL DISTURBANCES.

847. Polack, A. **Retinal functions in congenital amblyopia.** *Soc. d'opht. de Paris*, June 12, 1906.

848. Schapringer. **Treatment of retinal embolism.** *Centralbl. f. Augenheilk.*, xxx., p. 358.

849. Kalt. **Disciform hemorrhage at the posterior pole.** *Soc. d'opht. de Paris*, July 3, 1906.

850. Kuesel. **Pathogenesis of retinitis atrophicans centralis (Kuhnt).** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 464.

851. Paul, L. **Septic retinal changes in typhoid.** *Ibid.*, p. 73.

852. Best, F. **Suppression of visual impressions and their relation to amblyopia.** *Ibid.*, p. 493.

853. Bocci, D. **Case of so-called retinitis striata.** *Arch. di Ottalm.*, Feb., 1906.

854. Koellner, H. **Visual field in typical pigment degeneration of the retina.** *Zeitschr. f. Augenheilk.*, xvi., p. 128.

855. Cantonnet. **Papillo-macular region and color perimetry in retinal detachment.** *Arch. d'opht.*, xxvii., p. 513.

856. Uhthoff, W. **Treatment of retinal detachment.** *Abh. a. d. Geb. d. Augenheilk.*, vol. vi., No. 8.

857. Kalt. **Puncture of retina in detachment.** *Soc. d'opht. de Paris*, Nov. 6, 1906.

Polack (847, **Retinal functions in congenital amblyopia**) describes a case of unilateral congenital amblyopia in a paintress of twenty-six. No evidence of a central scotoma could be detected with perimetry, binocular fixation (Hirschberg), or stereoscopy (Heitz), and entoptic tests showed that the macular function was intact. There was normal light and color sense and a complete field for white and colors, although $V = \frac{1}{40}$.

Schapringer (848, **Treatment of retinal embolism**) discusses Fejer's case of embolism of a branch of the central retinal artery which came on immediately after a severe attack of coughing, and explains the lesion by extravasation of air from the lungs into the pleural cavity. This mechanism may also explain the cases of sudden blindness in pertussis and after gastric hemorrhages. The use of compressed air and of oxygen might be considered in treatment.

Kalt (849, **Disciform hemorrhage at the posterior pole**) observed a macular hemorrhage causing a disk-shaped detachment of the vitreous, 1*cm* in extent, in a patient of thirty-five. Kalt believes that Mueller's supporting fibres are prolonged into the vitreous at all points of the fundus except at the macula, and this peculiarity explains the occurrence of a localized detachment.

Kuesel [850, **Pathogenesis of retinitis atrophicans centralis (Kuhnt)**] discusses the etiology of retinitis atrophicans centralis in connection with a case in which this affection appeared with the usual ophthalmoscopic sequelæ of neuroretinitis, and was probably secondary to diphtheria. There was a noticeable disappearance of small macular veins. A similar change is inferred as to the arteries, and the retinitis attributed to this factor rather than to a preceding œdema of the retina.

Paul's (851, **Septic retinal changes in typhoid**) case of typhoid with retinal hemorrhages and white patches showed, on microscopical examination of the eye, varicose thickening of parts of the nerve-fibre layer, which he believes were caused by the action of toxins from endogenous poisons.

Best (852, **Suppression of visual impressions and their relation to amblyopia**) discusses the pathogenesis of hysterical, congenital, and inhibitory amblyopia. Many individuals with sound eyes are able to suppress the image in one, as in microscopy with both eyes open, and a central scotoma can be demonstrated in this eye. Amblyopia often depends on faulty innervation and lack of will power, and is amenable to exercise treatment. There is no incurable amblyopia from non-use, but the results of treatment are naturally better in very young patients. Worth's suggestions as to the treatment of squint are worthy of all consideration.

Bocci (853, **Case of so-called retinitis striata**) saw a man of thirty-seven with albuminuric retinitis following scarlet fever. Vision was much reduced and there was progressive hemeralopia. The fundus showed signs of optic atrophy and striate choroiditis about the disk. The striations were probably residua of exudates and analogous to the regressive metamorphosis seen in the re-attachment of the retina.

Koellner (854, **Visual field in typical pigment degeneration of the retina**) reports 12 cases of pigment degeneration of the retina in which he was able to demonstrate the preservation of a peripheral zone separated from the central area, confirming Gonin's observations. This finding is a link between cases of concentric contraction and those of ring-scotoma. The contraction of the field is at first annular, and the annular scotoma can be demonstrated in almost all severe

cases, even where the perimeter shows only a purely concentric contraction. The ophthalmoscopic changes support this observation, as the pigment degeneration diminishes not only toward the centre but also toward the extreme periphery. The distribution of the ciliary arteries and of the annular area of the choroid, which has few anastomoses, explain the peculiarity of the visual field.

CANTONNET (855, **Papillo-macular region and color perimetry in retinal detachment**) examined a number of cases of partial detachment of the retina, and found contraction of the peripheric fields for color. In the region of the disk there were also disturbances of color sensation, which may have been due to traction.

UHTHOFF (856, **Treatment of retinal detachment**) discusses the medicinal and operative treatment of retinal detachment. Of 422 cases, 85 were treated, and 36 recovered; 8 after operation, 10 after local and general treatment, and 18 spontaneously. In all, there was reattachment in 8, or 5%. Operations which involve the vitreous directly, or lessen the size of the globe, or cause continuous drainage, are to be condemned. Except in cases of extreme "flopping" detachment he advises simple measures at first. Scleral puncture with subconjunctival injections of salt in medium concentration are recommended. The subretinal fluid should be allowed to flow off slowly under the conjunctiva. Cauterization of the sclera may also be used.

KALT (857, **Puncture of retina in detachment**) observed intraocular hemorrhage in 2 cases in which scleral puncture had been performed for retinal detachment. Vision became worse than before operation.

XX.—OPTIC NERVE.

858. VAN D. HOEVE. J. **Coloboma of nerve head with normal vision.** *Ned. Tydsc. v. Geneesk.*, vol. ii., 19, 1906.

859. BLOCH, H. **Abnormal course of vessels on the disk.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 413.

860. BAADER, H. **Case of retrobulbar neuritis.** *In.-Diss.*, Tuebingen, 1906.

861. SCHMIDT-RIMPLER. **Rare form of encephalocele with choked disk.** *Zeitschr. f. Augenheilk.*, xvi., p. 438.

862. Peters. **Case of extreme choked disk.** *Corresp.-Bl. d. Allg. Mecklenb. Aerzte Vereins*, 1906, No. 267.

863. Kruedener, H. **Pathology of choked disk and changes after trephining.** *Arch. f. Ophth.*, lxv., 1, p. 69.

864. Levinsohn, G. **Experimental study of the pathogenesis of choked disk.** *Ibid.*, lxiv., p. 511.

865. Coats, G. **Case of occlusion of both central retinal vessels.** *Arch. f. Augenheilk.*, lvi., 3, p. 257.

866. Gross, O. **Further cases of thrombosis of the central vein.** *Lond. Ophth. Hosp. Reps.*, vol. 16, part 4.

867. Fejer, J. **On partial embolism of the central retinal artery.** *Arch. f. Augenheilk., Klin. Monatsbl. f. Augenheilk.*, lvi., ii., p. 257.

868. Parazols, J. **Ophthalmoscopic appearance of syphilitic neuritis.** *Rec. d'opht.*, xxviii., p. 578.

869. Galezowski, J. **Two cases of bi-temporal hemianopsia.** *Soc. de neurol. de Paris*, July 3, 1906.

870. Grueger, A. **Hemianopsia with disturbances of orientation.** *Beitr. z. Augenheilk.*, No. 66.

871. Hubbell, A. **Unilateral inflammation of optic nerve and retina.** *Journ. Amer. Med. Assn.*, July 7, 1906.

Bloch (859, **Abnormal course of vessels on the disk**) describes three cases of cilio-retinal veins in glaucoma, chorio-retinitis, and choked disk. The new formation of these vessels was probably due to congestion caused by the intra-ocular disease.

Baader (860, **Case of retrobulbar neuritis**) reports 14 typical cases of acute retrobulbar neuritis and advises treatment by means of free diaphoresis, inunctions, local abstraction of blood, and purgatives.

Schmidt-Rimpler's (861, **Rare form of encephalocele with choked disk**) case was that of a female child one year old with encephalocele on both sides of the major fontanelle, in which both eyes showed choked disk. Compression of the hernia cerebri caused a marked reddening of the disk. This speaks in favor of the mechanical-transportation theory of the development of choked disk.

Peters (862, **Case of extreme choked disk**) attributes the choked disk in his case to serous meningitis. The sister of his female patient had had the same affection due to the same cause some years before.

von Kruedener (863, **Pathology of choked disk and changes after trephining**) reports several cases of brain tumor

with choked disk improved by trephining, of course only temporarily. Lumbar puncture was also beneficial for a time. It is not inflammation but increased intracranial pressure that causes papillary stasis.

Levinsohn (864, **Experimental study of the pathogenesis of choked disk**) ligated the optic nerve of rabbits and cats and then injected cinnabar into the subarachnoid space. A slight stasis in the subvaginal lymph space occurs only if the central vessels were not ligated. Distal stasis was only produced by ligation of central vessels. There is a slight lymph current from the brain to the globe through the vaginal space, but off-flow from the eye takes place through the perivascular lymph spaces of the central vessels. Stases in the proximal portion of the nerve after ligation cause marked inflammation, leading to obliteration of the vaginal spaces so that injected coloring matter cannot enter the sheaths at these points. Increased intracranial pressure and inflammatory changes in the cerebro-spinal lymph cause obstruction of the perivascular lymph spaces of the central vessels and embarrass off-flow of intraocular fluids. Inflammatory changes are secondary. That increased pressure within the vaginal space does not cause stasis by direct compression of vessels and obliteration of their lumina is shown by the cases in which there were retinal hemorrhages.

Coats (865, **Case of occlusion of both central retinal vessels**) in a previous article on thrombosis of the central vein has noted that six varieties of local disease have been held responsible for the characteristic changes. He now reports the clinical and histological examination of 11 more cases, in all of which an obstruction was found at some point of the vein, fully explaining the symptoms. This disposes of two theories, that of multiple emboli or thrombi of the retinal artery, and changes in the retinal vessels not due to thrombosis or embolism. A third, hemorrhage into the substance of the optic nerve, has never been proven. Multiple thrombi of the retina without thrombosis of the central vein has never been demonstrated in a case in which the nerve was examined from end to end. In the great majority of cases the underlying lesion is actually a more or less organized thrombus. The absolute immunity of the other eye is striking.

Secondary glaucoma is frequent, the relation evident, but not to be explained. Mydriatics should never be prescribed once this condition has been found. Prognosis depends on general condition more than anything else, as cases have been watched for years without constitutional symptoms developing. In only two cases was there thrombosis of other vessels, viz., those of the brain.

Gross (866, **Further cases of thrombosis of the central vein**) saw obstruction of both central vessels in the fundus of a woman of forty-eight, confirming the statement of Harms, that the pictures of venous and of arterial thrombosis are not to be sharply separated, as they frequently occur in conjunction.

Fejer (867, **On partial embolism of the central retinal artery**) used circular massage in a case of embolism of the main branch of the central artery of the retina in a girl of twenty-two, and got $V = \frac{5}{60}$. Knapp's hypothesis of breaking up of the thrombus and enlargement of the vessel bore is accepted. The possibility of collateral circulation by means of cilio-retinal vessels is denied.

Parazols (868, **Ophthalmoscopic appearance of syphilitic neuritis**) studied the clinical characteristics of optic neuritis in syphilis. It is probably due to the toxins of the spirochæta, is occasionally associated with marked œdema and swelling of the disk, frequently complicated with retinitis, and always begins with vitreous opacities. Differential diagnosis is aided by lumbar puncture and the characteristic appearance of syphilitic retinitis. Prognosis is good if energetic treatment with mercury can be instituted at an early stage. Dyschromatopsia and contraction of the visual field are always ominous symptoms. Twenty-seven case reports are given.

Galezowski (869, **Two cases of bi-temporal hemianopsia**) demonstrated two patients with bi-temporal hemianopsia and incipient optic-nerve atrophy. In one case radiography showed an enlargement of the sella turcica and there was distinct hemianopic pupillary reaction. Tumor pressing on the chiasm was probable.

Grueger (870, **Hemianopsia with disturbances of orientation**) reports a case of apoplexy with right-sided hemianopsia,

followed by right hemiplegia and blindness, marked loss of memory and disturbances of orientation. Sixty-six cases with this last symptom are analyzed, mostly due to lesion of the occipital lobe.

HUBBELL (871, **Unilateral inflammation of the nerve and retina**) reports: 1. Unilateral optic neuritis; 4 cases with recovery of normal vision, or thereabouts. 2. Unilateral neuro-retinitis; 1 in nephritis, 1 with general arterio-sclerosis, 1 in a healthy subject, and albuminuria. 3. Unilateral retinitis; 10 cases, 3 were mild, and recovered; in 1 the eye was lost; in the 6 other cases the result was unknown or still undecided.

XXI.—INJURIES, FOREIGN BODIES, PARASITES.

872. HIRSCHBERG, J. **Injuries of the visual sphere.** *Centralbl. f. Augenheilk.*, xxx., p. 200.

873. HIRSCHBERG, J. **Three cases of eye injury from tennis balls.** *Centralbl. f. Augenheilk., ibid.*, p. 263.

874. BECK, A. **Perforating injuries of the globe.** *Arch. f. Augenheilk.*, lv., p. 375.

875. PLITT, W. **Copper chip in anterior chamber detected by radiograph.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 537.

876. PETERS, A. **Histological study of corneal injury due to forceps delivery.** *Arch. f. Augenheilk.*, lvi., 4, p. 311.

877. MORAX, V. **Ocular affections in trypanosomiasis.** *Annal. d'ocul.*, cxxxvi., p. 438.

HIRSCHBERG (872, **Injuries of the visual sphere**) reports a case of permanent right hemianopsia with left-sided deafness and facial paresis, following injury to the occipital lobe by comminuted fracture of the skull. In a second case there was trauma of both visual spheres after blow with a blunt instrument on the left parietal bone.

HIRSCHBERG (873, **Cases of eye injury from tennis balls**) reports three cases of ocular injury due to tennis balls. In one there was a choroidal rupture through the middle of the retina with other signs of sudden compression, and a central scotoma which partially cleared up. Vision improved slightly. Myopes and those who wear glasses should be careful in playing this game.

BECK (874, **Perforating injuries of the globe**) studied 100 cases of perforating injury of the eye, 13 of which had been treated with iodoform disks. No harm was done in any case,

but the curative effect is doubtful. In a case of sympathetic ophthalmia coming on fourteen days after exenteration, and thirty-four after injury, V = $\frac{1}{10}$, the stump was removed, bichloride injected subconjunctivally, and inunctions administered energetically. Haab's magnet was used in a large number of the cases.

Peters (876, **Histological study of corneal injury due to forceps delivery**) describes a vertical tear through the cornea and Descemet's membrane caused by forceps delivery. There were no endothelial cells to be found in the parts of the cornea not covered by Descemet's membrane. Similar conditions were noted in congenital absence of this membrane.

Morax (877, **Ocular affections in trypanosomiasis**) describes the ocular diseases of man and animals which are caused by infection with trypanosomes. These protozoa cause constitutional diseases such as nagana (tsetse-fly disease), surra, and others. The sleeping sickness (nagana), alone, causes ocular symptoms, viz., œdema of lower lids, iritis, choroiditis, and unexplained temporary obscurations of vision. In animals blepharo-conjunctivitis purulenta, containing trypanosomes, interstitial keratitis, iritis, iridocyclitis, and chorio-retinitis, have been seen.

XXII.—OCULAR LESIONS IN GENERAL DISEASE.

878. Chaillous, F. **Condition of the oculomotors in organic hemiplegia of infancy and adult life.** *Annal. d'ocul.*, cxxxvi., p. 288.

879. Godelstein, S. **Syphilitic basilar meningitis with combined oculomotor paralysis.** *In.-Diss.*, Berlin, 1906.

880. Carlini, V. **Amaurosis following acute anæmia due to hemorrhage.** *Clin. Oculist.*, Feb., 1906.

881. Feilchenfeld, H. **Case of syphilitic tarsitis.** *Arch .f. Augenheilk.*, lvi., p. 350.

882. Lewit, J. **Tabetic atrophy in hereditary lues.** *In.-Diss.*, Berlin, 1906.

883. Haltenhoff. **Heredo-syphilis in the third generation.** *Rev. méd. de la Suisse rom.*, xxvi., No. 6.

884. Koster, W. **Further experiences with treatment of so-called hay-fever.** *Zeitschr. f. Augenheilk.*, xvi., p. 25.

885. Ingelrans, L. **Diabetic neuralgia and neuritis.** *Gaz. des hôpit.*, 1906, p. 26.

886. Uhthoff, N. **Ophthalmoscopic finding in so-called polycythæmia.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., 149.

887. Morax. **Hemianopsia and pupillary reaction in the course**

of development of an orbital and intracranial tumor. *Soc. d'opht. de Paris*, Oct. 9, 1906.

888. Baatz, C. **Pupillary conditions in mental disease.** *In.-Diss.*, Tuebingen, 1906.

889. Spassky. **Hepatic ophthalmia.** *Russky Wratsch.*, 1906, p. 23.

890. Gifford, H. **New eye symptom in exophthalmic goitre.** *Klin. Monatsbl. f. Augenheilk.*, xliv., ii., p. 201.

891. Morgano, R. **Acute uræmic optic neuritis.** *Boll. del Osped. ottalm. d. Prov. d.* Roma, 1906.

892. Sgrosso, F. **Certain consequences of malarial neuro-retinitis.** *Annal. di Ottalm.*, Oct., 1906.

893. Bertozzi, A. **Pupillary reaction in mental disease.** *Annal. di Ottalm.*, *Feb.* 6, 1906.

894. Berger and Loewy, R. **On ocular disturbances of sexual origin in women.** Rossbach, Wiesbaden, 1906.

Chaillous (878, **Condition of the oculomotors in organic hemiplegia of infancy and adult life**) notes that in hemiplegia the paralysis of the ocular muscles which accompanies the affection of the upper part of the facial is more marked on the side of the hemiplegia, and in recent than in old cases. Ptosis, mydriasis, and paralysis of accommodation are less frequent than affections of the lower eye muscles. They are generally transitory but may persist for a long time. Associated paralyses disappear more rapidly in children.

Godelstein (879, **Syphilitic basilar meningitis with combined oculomotor paralysis**) reports a case of basilar meningitis with oculomotor, abducens, and trochlearis paralysis, an unusual combination. The differential diagnosis from tuberculous meningitis is discussed in detail.

Carlini (880, **Amaurosis following acute anæmia due to hemorrhage**) observed a case of blindness after copious hemorrhage from a cut of the radial artery in a young workman. The pupils did not react to light but were not dilated. Fundus normal. After several days there was some sight. The pupillary reflexes became normal, but incomplete left hemianopsia anæmica persists. The lesion was probably situated in the cortical visual centres, especially the right.

Feilchenfeld (881, **Case of syphilitic tarsitis**) cured a case of syphilitic tarsitis with inunctions. Diffuse œdema of the upper lid and indolent swelling of the pre-auricular glands were noted. No spirochæta could be detected in excised tissue, and there were no gummatous formations but merely

diffuse infiltration, newly formed lymph vessels, and increase of capillaries, as in acute inflammation.

Lewit (882, **Tabetic atrophy in hereditary lues**) saw optic nerve atrophy in a case of juvenile tabes on a basis of hereditary syphilis. It is noted that after development of the optic nerve affection, other tabetic disturbances, such as paralysis of sphincters, crises, and so on, do not occur. The optic atrophy seems to have a sort of inhibitory action; at all events it represents a special form of juvenile tabes.

Haltenhoff (883, **Heredo-syphilis in the third generation**) saw a girl of eleven with heredito-specific choroidal changes at the left macula, clouding of the retina about the disk and loss of pigment in both eyes. V, OD. $= \frac{1}{3}$; V, OS. $= \frac{1}{4}$. The mother had had parenchymatous keratitis due to inherited lues at eighteen, and irido-cyclitis later. Energetic treatment with inunctions were very effectual, and vision rose almost to normal.

Koster (884, **Further experiences with treatment of so-called hay-fever**) finds so-called hay-fever common in noses affected with chronic rhinitis, with lack of secretion. Accordingly he advises stimulation by means of douches with 3% chlorate of potash, and diet.

Ingelrans (885, **Diabetic neuralgia and neuritis**) discusses diabetic paralyses of ocular muscles. The lesion is rarely nuclear, and often peripheral. Dieulafoy's theory that an affection of the 4th ventricle simultaneously produced diabetes and oculomotor paralysis is incorrect. The objection to the toxin theory, that sugar is not a poison, fails to take into consideration the fact that toxic peripheral neuritis in diabetics is caused not by sugar, but by oxy-butyric acid, acetone, and so on.

Uhthoff (886, **Ophthalmoscopic finding in so-called polycythæmia**) describes the ophthalmoscopic finding in a case of polycythæmia with ten to twelve million red cells. The veins were unusually full and tortuous, and dark blue in color. Venesection was used in the treatment.

Morax (887, **Hemianopsia and pupillary reaction in the course of development of an orbital and intracranial tumor**) demonstrated a sarcoma of the meninges of the middle fossa. Exophthalmus and bulging in the temporal region were the

first symptoms. Later, hemianopic pupillary paralysis was noted and the diagnosis made of orbital tumor invading the cranial cavity and involving the optic tract. Autopsy showed an orbital tumor the size of a hazel-nut connected with a tumor at the base of the brain between the dura and pia, as large as the cerebellum. The latter had made pressure on the large wing of the sphenoid and produced atrophy of the corresponding optic tract.

Baatz (888, **Pupillary conditions in mental disease**) examined the pupils in insanity of various types. He was unable to find any characteristic conditions except in dementia paralytica. Large pupils distinguish the katatonic form of dementia præcox from other psychoses.

Spassky (889, **Hepatic ophthalmia**) reviews the literature of hepatic ophthalmia and reports a case of a man of forty-two, who had had repeated attacks of gall-stones for two years. In the first three attacks no ocular symptoms were noticed. The fourth was attended with marked jaundice, hemeralopia, diminution of central vision, concentric contraction of the color fields, xanthopsia, icteric discoloration of the sclera, and xerosis of the conjunctiva. Ophthalmoscopic examination showed blurring of the disk margins, cloudy fundus at disk and macula, enlarged veins, and narrow arteries. Apparently a thin layer of extravasated blood in the choroid in the neighborhood of the dilated vorticose veins. The lesions depend on the icteric blood changes.

Gifford (890, **New eye symptom in exophthalmic goitre**) notes two early symptoms of exophthalmic goitre, viz., difficulty in everting the upper lids, and swelling of the tissues about the eyebrows.

Morgano (891, **Acute uræmic optic neuritis**) reports two cases of acute optic neuritis, one retrobulbar, one papillary, of uræmic origin. The visual disturbance came on suddenly in both patients, aged respectively fifty-five and eighteen, with marked pain in the globe and orbit, and caused almost complete blindness within eight days. Appropriate diet and diuresis brought about a cure.

Sgrosso (892 **Certain consequences of malarial neuro-retinitis**) reports two cases of neuro-retinitis and chorio-retinitis with pigment deposits about the retinal arteries, and

the equatorial and circumpapillary regions. The deposits resemble those seen in hereditary syphilis and retinitis pigmentosa.

Bertozzi (893, **Pupillary reaction in mental disease**) studied the pupil in various forms of insanity and concludes that anomalies of reaction are frequent but never characteristic.

Berger and Loewy (894, **On ocular disturbances of sexual origin in women**) discuss ocular affections and sexual disorders in women. Anomalies of menstruation, and disturbances of pregnancy, childbirth, and the puerperium, as well as lesions of the infantile eye intra partum are considered at length.

BOOK REVIEWS.

I.—**Diseases of the Eye.** A Manual for Students and Practitioners. By J. Herbert Parsons, D.Sc., etc., London. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1907. Price, $3.50 net.

Mr. Parsons's manual is the latest accession to what might be called the medium-sized text-book on the eye. Its distinctive features as described in the preface are based upon the author's firm belief that even for a medical student knowledge of the fundamental optical and physiological principles are necessary for the comprehension of ocular affections. The timorous reader need not fear from this that an exhaustive and abstruse description replete with mathematical formulæ follows. Agreeing entirely with the author's views, this part of the book seems to the reviewer to cover the subject in an admirable way, and one which stimulates the reader's interest and should be of the greatest value to the student. The clinical part, which it would be impossible at the present day to deal with in an original way, is clear, brief, and sufficiently complete. The illustrations are well selected and adequate. It will be a pleasure to recommend this well written and excellent book.

A. K.

II.—**The Refraction of the Eye.** By Gustavus Hartridge, F.R.C.S. London. 14th edition. 268 pages. 109 illustrations. Philadelphia: P. Blakiston's Son & Co. 1907. Price, $2.00.

This introduction to refraction work now appears in its fourteenth edition. This is proof enough that it admirably fulfils its purpose. Without being enlarged it has been

carefully revised and brought well up to date. The author has succeeded in describing clearly and briefly the many features in refraction which are apt to be so intricate to the beginner, and unquestionably each year the number of thankful readers will steadily increase. A. K.

III.—**Retinoscopy.** By JAMES THORINGTON, M.D. 5th edition. Revised and enlarged with three additional illustrations. Philadelphia: P. Blakiston's Son & Co. 1907. Price, $1.00.

The value of retinoscopy for objectively determining errors of refraction cannot be sufficiently insisted upon. Perfect acquaintance with the method must be the aim of every beginning specialist. An excellent guide is furnished by Dr. Thorington's well-known little book, which is short, clearly written, and well illustrated. A. K.

IV.—**Les corps étrangers magnétiques intraoculaires et leur extraction.** (Intraocular Magnetic Foreign Bodies and their Extraction.) By Dr. RAYMOND BEAL. 132 pages, 32 figures. Prix, 2 fr. 50. Paris, 1908. G. Steinheil, 2, rue Casimir-Delavigne, Paris, VI.

This short monograph of 130 pages is especially designed for French readers owing to the fact, as the author states in his preface, that extraction of magnetic intraocular foreign bodies with the magnet has not received the attention it deserves either in French text-books or in French medical literature. His chief, Dr. Morax, has used the Volkmann's magnet for eight years, and the cases treated by this means form the clinical basis of this contribution. The work is divided into diagnosis, extraction, and prognosis. According to the author, the surest and most rapid diagnostic procedure is to bring the eye near the magnet when pain, forward movement of eye, and bulging of iris are observed, if a magnetic particle is in the eye. The best method of extraction is to use the hand magnet (Hirschberg) and the giant magnet (Volckmann) according to the individual condition. Finally, the prognosis is always to be considered grave and should be reserved. Twenty-seven personal observations follow. A. K.

V.—**Der Sehnerv und die Nebenhöhlen der Nase.** (The Optic Nerve and the Nasal Accessory Cavities.) Contribution to the study of canalicular optic neuritis and optic atrophy of nasal origin. By Prof. A. Onodi, Professor of Rhinolaryngology at Budapest University, etc. With 33 illustrations. Vienna, 1907. Alfred Hölder. Price, 6 Marks.

The relation of the optic nerve to the accessory cavities of the nose has been the subject of the author's study for ten years. He has shown that the posterior ethmoidal cells, instead of the sphenoidal cavity as is generally assumed, often come into relationship with the optic nerve in its course from the skull to the orbit. This monograph consists of a part on topographical anatomy and a clinical part.

1. Topographic Anatomy. The topographical relation of the optic nerve, optic canal, and optic sulcus to the posterior ethmoidal cells and sphenoidal sinus are first described. The author has found 38 different relations which in turn can be subdivided into 12 groups. These conditions are excellently illustrated by photographic reproductions of natural size.

These show the very varying and intricate forms which these accessory cavities may assume, and the many possible conditions of clinical significance which may be present. Of particular interest is the group where the posterior ethmoidal cell of one side is in relation in five forms to the optic nerve of the same side, and in two to the nerve of the opposite side; and the group with seven conditions, where the sphenoidal cavity in four is in relation to the optic nerve of the same side; in two, to the optic nerve of the opposite side, and in one to the middle.

When the wall of the optic canal and optic sulcus is formed by the posterior ethmoidal cell it may be very thin, like tissue paper or 1 to 2*mm* thick; when this wall is formed by the sphenoidal cavity it is usually much thicker, and varies from 1 to 12*mm*.

Mention is made of the dehiscences which may occur in the bony walls of accessory cavities and of the possible rôle which the ethmoidal semicanal and the turbinal cell play in transmitting infection.

2. Clinical Part. The way in which diseases of the ac-

cessory cavities cause visual disturbances and blindness is only imperfectly understood. The subject demands more careful post-mortem and microscopic examinations. The various observations, clinical and operative, and autopsy-reports on complications of the different accessory cavities as they occur in literature are briefly reported. The venous system is of great importance in the transmission of the infection; bony dehiscences are favoring factors. Finally the subject of contralateral and bilateral visual disturbances and blindness after one-sided affections of the accessory cavities is treated. The anatomical foundation of this lesion is furnished by varieties of form-relation previously described. For treatment of disease of accessory nasal cavities the reader is referred to Onodi and Rosenberg's text-book *Die Behandlung der Krankheiten der Nase und des Nasen-Rachenraums*, 1906. The author closes with the hope that this important chapter will find its successful completion by the conjoined investigation of the rhinologist and ophthalmologist.

A. K.

Fig. 1.

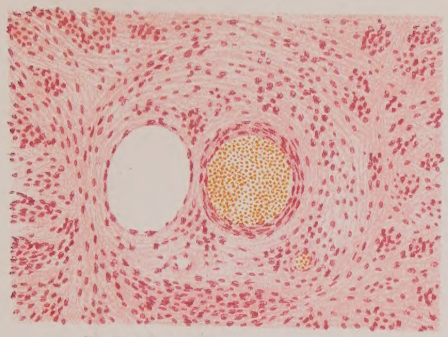


Fig. 2.

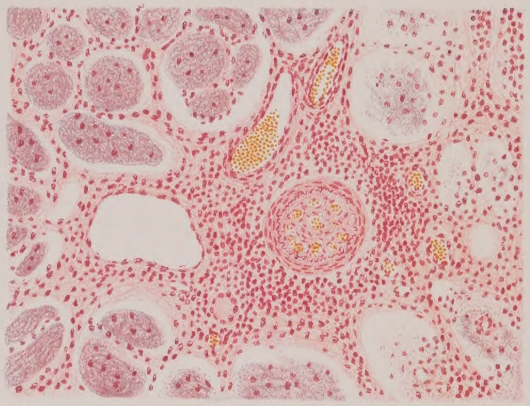


Fig. 3a

Fig. 3b

Fig. 4.

Fig. 5.

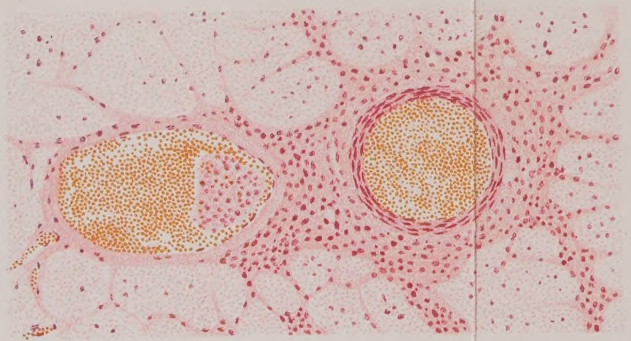
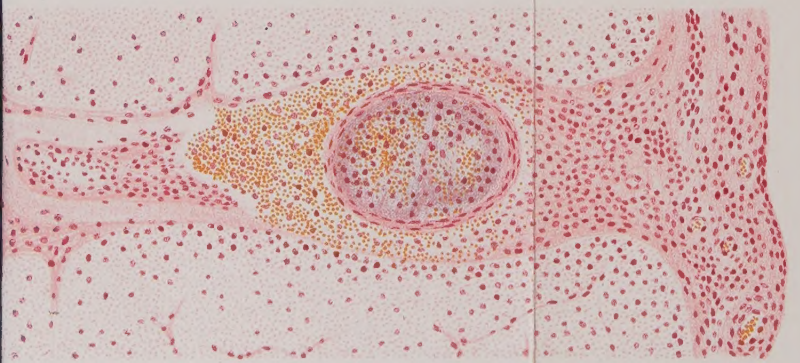


Fig. 6.



ge der Erblindung

Kgl. Univers. Druckerei v. H. Stürtz, Würzburg.